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[No. 25.]

JOURNAL
of the
STRAITS BRANCH
of the
Royal Asiatic Society.

JANUARY, 1894.

SINGAPORE:
Reprinted at the American Mission Press.
1904.

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AGENTS OF THE SOCIETY:
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THE

STRAITS BRANCH

OF THE

ROYAL ASIATIC SOCIETY.

PATRON:

His Excellency SIR CECIL CLEMENTI SMITH, G. C. M. G.

Council for 1893.

His Excellency Major-General Sir CHARLES WARREN, G.C.M.G., K. C. B., *President.*

The Hon'ble W. E. MAXWELL, C. M. G., *Vice-President, Singapore.*

D. LOGAN, Esquire, *Vice-President, Penang.*

H. N. RIDLEY, Esquire, *Honorary Secretary.*

H. T. HAUGHTON, Esquire, *Honorary Treasurer.*

A. KNIGHT, Esquire, H. L. NORONHA, Esquire, C. W. S. KYNNERSLEY, Esquire, Lieut. H. J. KELSALL, R. A., The Hon'ble J. W. BONSER,	*Councillors.*

LIST OF MEMBERS

FOR

1893.

Nos.	Names.	Addresses.
1	ABRAHAMSON, E. E.	Sandakan, B. N. B.
2	ALLINGHAM, S.	25, Grosvenor Street, Grosvenor Square, London, W.
3	ANTHONISZ, J. O.	Singapore.
4	ATKINSON, H. S.	Singapore.
5	BAMPFYLDE, C. A.	Kuching, Sarawak.
6	BARNES, W. D.	Penang.
7	BECHER, H. M.	Singapore.
8	BEESTON, Capt. R. D.	Sandakan, B. N. B.
9	BELLAMY, G. C.	Kuala Lumpur, Selangor.
10	BERNARD, F. G.	Woodleigh, Seranggong Road, Singapore.
11	BERRINGTON, A. T. D.	Selangor.
12	BICKNELL, W. A.	Audit Department, Penang.
13	BIRCH, J. K.	First Magistrate, Penang.
14	BLAGDEN, C. O.	Malacca.
15	BLAND, R. N.	Land Department, Singapore.
16	BONSER, The Hon'ble J. W.	Singapore.
17	BOTT, Dr. W. L.	The Grange, Grange Road, Singapore.
18	BRADDON, Dr. W. L.	Sungei Ujong.
19	BRANDT, D.	Europe.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
20	Brown, Dr. W. C.	Beach Street, Penang.
21	Bryant, A. T.	District Office, Dindings.
22	Buckley, C. B.	Orchard Road, Singapore.
23	Burkinshaw, J.	....
24	Cameron, Capt. M. A., R.E.	Dover, England.
25	Camus, M. de	Singapore.
26	Clain, J.	87, Rue du Cherche Midi, Paris.
27	Clifford, H. C.	Kuala Lipis, Ulu Pahang.
28	Copley, George	Municipality, Malacca.
29	Creagh, His Excellency C. Vandeleur, C.M.G.	Sandakan, B. N. B.
30	Croix, J. Errington de la	Paris.
31	Currie, Andrew	28, Fenchurch Street, London.
32	Dane, Dr. R.	Singapore.
33	Dent, Sir Alfred, K.C.M.G	11, Old Broad Street, London, E. C.
34	Dew, A. T.	Perak.
35	Diethelm, W. H.	Hooglandt & Co., Singapore.
36	Down, St. V. B.	Singapore.
37	Dunlop, C.	Powell & Co., Singapore.
38	Ebhardt, Hans	Hilty & Co., Singapore.
39	Egerton, Walter	Penang.
40	Elcum, J. B.	....
41	Eschke, H. H.	German Consulate, Singapore.
42	Everett, A. Hart	Labuan.
43	Everett, H. H.	Sarawak.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
44	FERGUSON, A. M., Jr.	18 & 19, Baillie Street, Fort, Colombo.
45	FEILDING, J.	....
46	GAGGINO, G.	Gaggino & Co., Singapore.
47	GENTLE, ALEX.	Grange Road, Singapore.
48	GOLDNEY, Sir JOHN T.	Trinidad.
49	GOSLING, T. L.	River Valley Road, Singapore.
50	GOTTLIEB, G. S. H.	Penang.
51	GRAHAM, JAMES	Glasgow.
52	GULLAND, W. G.	Paterson, Simons & Co., England.
53	HALE, A.	Negri Sembilan.
54	HAUGHTON, H. T.	Singapore.
55	HAVILAND, Dr.	Kuching, Sarawak.
56	HERVEY, The Hon'ble D. F. A., C.M.G.	Resident Councillor, Malacca.
57	HILL, E. C. H.	Inspector of Schools, Singapore.
58	HILL, F. W.	Selangor.
59	HOSE, Right Revd. Bishop G. F., M.A., D.D. (Honorary Member)	Singapore.
60	HOSE, C.	Baram, Sarawak.
61	HOUTHUYSEN, C. L.	Batavia.
62	HOYNCK VAN PAPENDRECHT, P. C.	Singapore.
63	HUDSON, H. H.	Singapore.
64	HULLETT, R. W., M.A., F.L.S.,	Singapore.
65	IBRAHIM BIN ABDULLAH, Dato Dalam	Johor Bharu.
66	IRVING, C. J., C.M.G.	Hillands, Tiverton, Devonshire, England.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
67	JOAQUIM, J. P.	Singapore.
68	JOHOR, H. H. the Sultan of the State and Territory of, G.C.M.G., G.C.S.I. (Honorary Member)	Johor.
69	KEGAN, PAUL TRENCH, TRÜBNER & Co.	London.
70	KEHDING, F.	Laboean, Deli.
71	KEITH, Dr. A.	Bangkok.
72	KELSALL, Lieut. H. J., R.A.	Fort Canning, Singapore.
73	KENNEDY, ARCHIBALD	Batu Gajah, Kinta, Perak.
74	KER, T. RAWSON	Johor Baharu, Johor.
75	KNIGHT, ARTHUR	Grassdale, River Valley Road, Singapore.
76	KROM MUN DEWAWONGSE VAROPRAKAR, H. R. H. Prince	Bangkok, Siam.
77	KYNNERSLEY, C. W. S.	Singapore.
78	LAKE, H.	....
79	LAUGHER, H.	Singapore.
80	LAVINO, G.	Dutch Consulate, Singapore.
81	LAWES, Revd. W. G. (Honorary Member)	PortMoresby,NewGuinea.
82	LEASK, Dr. J. T.	Malacca.
83	LEES, F. BALFOUR	....
84	LEWIS, JOHN E. A.	Government Printing Office, Sarawak.
85	LISTER, Hon. MARTIN	Negri Sembilan.
86	LITTLE, R. M.	Gaya, B. N. B.
87	LITTON, G. B.	Canton.
88	LOGAN, DANIEL	Penang.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
89	Low, Sir Hugh, G.C.M.G.	England.
90	Macbean, W.	Straits Insurance Office, Hongkong.
91	Machado, A. D.	Temoh Gold Mines, Patani.
92	Martin, Dr. L.	Mabar Estate, Deli, Sumatra.
93	Maxwell, The Hon'ble W. E., C.M.G.	Colonial Secretary's House Singapore.
94	Maxwell, R. W.	Inspector-General's Office, Singapore.
95	McKillop, J.	Pulau Brani, Singapore.
96	Meldrum, Dato'	Johor.
97	Merewether, E. M.	Malacca.
98	Miller, James	Gilfillan, Wood & Co., Singapore.
99	Nason, Wm., F.S.A.	Craigton, Tanglin, Singapore.
100	Napier, W. J.	Paterson Road, Singapore.
101	Neave, D. C.	Cluny Road, Tanglin, Singapore.
102	Newton, Howard	Grasslands, St. Thomas Walk, Singapore.
103	Noronha, H. L.	Killeney Road, Singapore.
104	O'Brien, H. A.	Singapore.
105	O'Sullivan, A. W. S.	Penang.
106	Owen, J. F.	Kuala Pahang.
107	Parkes, D. G.	Thaiping, Perak.
108	Paul, W. F. B.	Sungei Ujong.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
109	PERAK GOVERNMENT MUSEUM (Curator of)	Thaiping, Perak.
110	PERHAM, The Ven. Archdeacon J. (Honorary Member)	Singapore.
111	READ, W. H. M., C.M.G.	9, Petersham Terrace, Queen's Gate, London.
112	REITH, Revd. GEO. M.	Mount Elizabeth, Singapore.
113	RICKETT, C. B.	Hongkong and Shanghai Bank, Foochow.
114	RIDLEY, H. N., F.L.S.	Botanic Gardens, Singapore.
115	RODGER, J. P.	Pekan, Pahang.
116	ROST, Dr. REINHOLD (Honorary Member).	India Office Library, London, S. W.
117	SALMON, J.	....
118 119	SARAWAK, H. H. The Raja of, G.C.M.G. (Honorary Member)	Kuching, Sarawak.
120	SATOW, E. M., C.M.G. (Honorary Member)	Monte Video, S. America.
121	SCHAALJE, M.	Medan, Deli.
122	SCOTT, Dr. DUNCAN	Europe.
123	SEAH LIANG SEAH	Chop "Chin Hin," Singapore.
124	SEAH SONG SEAH	Chop "Chin Hin," Singapore.
125	SHELFORD, The Hon'ble T., C.M.G.	Broadfields, Paterson Road Singapore.
126	SHELFORD, W. H.	Singapore.
127	SKINNER, The Hon'ble A. M., C.M.G.	Resident Councillor, Penang.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
128	SMITH, H. E. Sir CECIL CLEMENTI, G.C.M.G.	Government House.
129	SOHST, T.	Mount Rosie, Chancery Lane, Singapore.
130	SOURINDRO MOHUN TAGORE, RAJA, Mus. Doc.	Pathuria Ghata Raj Bati, Calcutta, India.
131	ST. CLAIR, W. G.	*Singapore Free Press* Office, Singapore.
132	STRINGER, C.	Singapore.
133	SWETTENHAM, F. A., C.M.G.	Resident, Perak.
134	SYED MOHAMED BIN AHMED AL SAGOFF	Singapore.
135	SYED ABUBAKAR BIN OMAR AL JUNIED	Arabia.
136	SYERS, H. C.	Kuala Lumpur, Selangor.
137	TALBOT, A. P.	Government Hill, Singapore.
138	THOROLD, F. THOROLD	England.
139	TREACHER, W. H., C.M.G.	Resident, Selangor.
140	VAN BENNINGEN VAN HELSDINGEN, Dr. R.	Deli, Sumatra.
141	VERMONT, THE HON'BLE J.M.B.	Batu Kawan Estate, Province Wellesley.
142	WALKER, LIEUT.-Col. R. S. F., C.M.G.	Thaiping, Perak.
143	WALKER, H.	Land and Survey Department, Sandakan, B. N. B.
144	WARREN, H. E. Major-General Sir CHARLES, G.C.M.G., K.C.B.	Singapore.

MEMBERS FOR 1893,—*Continued.*

Nos.	Names.	Addresses.
145	WATSON, E. A.	Pahang.
146	WEST, F. G.	Selangor.
147	WHEATLEY, J. J. L.	Muar.
148	WILDMAN, R.	America, U. S. A.
149	WISE, E. A.	Pekan, Pahang.
150	WRAY, L., Jr.	Perak Museum, Perak.
151	WRENCH, D. T.	Singapore.

Members are requested to inform the Secretary of any change of address or decease of members in order that the list may be as complete as possible.

All communications concerning the publications of the Society should be addressed to the Secretary ; all subscriptions to the Treasurer.

Members may have on application forms authorising their Bankers or Agents to pay their subscription to the Society regularly each year.

PROCEEDINGS

OF THE

Annual General Meeting

OF THE

STRAITS BRANCH

OF THE

Royal Asiatic Society,

HELD AT THE

RAFFLES MUSEUM

ON

MONDAY, 23RD JANUARY, 1893.

Present.

His Excellency Major-General Sir CHARLES WARREN, G.C.M.G., K.C.B., *President;* The Hon'ble W. E. MAXWELL, C.M.G., H.T. HAUGHTON, Esq., W. J. NAPIER, Esq., A. KNIGHT, Esq., Lieut. H. J. KELSALL, R.A., H. L. NORONHA, Esq., Dr. W. BOTT, C. W. S. KYNNERSLEY, Esq., W. G. ST. CLAIR, Esq., and H. N. RIDLEY, Esq., *Honorary Secretary.*

The minutes of the last general meeting were read and confirmed.

The Annual Report was read and accepted.

The Accounts of the Honorary Treasurer were passed.

The following Officers were then elected for the ensuing year :—

President,—His Excellency Major-General Sir CHARLES WARREN, G.C.M.G., K.C.B.

Vice-Presidents,—Singapore: The Hon'ble W. E. MAXWELL, C.M.G.; Penang: D. LOGAN, Esq.

Honorary Secretary,—H. N. RIDLEY, Esq.

Honorary Treasurer,—H. T. HAUGHTON, Esq.

Councillors,—A. KNIGHT, Esq., H. L. NORONHA, Esq., C. W. S. KYNNERSLEY, Esq., Lieut. H. J. KELSALL, R.A., and the Hon'ble J. W. BONSER.

The following new members were elected :—

Dato MELDRUM, Sir E. C. BOVILL, Kt., H. H. HUDSON, Esq., and H. S. ATKINSON, Esq.

The Secretary stated that, in accordance with a minute, he had written to the chief Printing Presses to enquire what would be the cost of printing the Journal, and that he had received two answers—one from the American Mission Press at 75 cents a page for 300 copies, and one from the Singapore and Straits Printing Office at 2 dollars a page for 200 copies.

It was agreed to put the work in the hands of the former.

ANNUAL REPORT
OF THE
COUNCIL
OF THE
STRAITS BRANCH
OF THE
Royal Asiatic Society

For the Year 1892.

The Council are happy to state that the affairs of the Society continue to be financially in a satisfactory condition.

The following members were elected by the Council during the past year:—

Mr. A. T. D. Berrington.
Mr. G. B. Litton.
Mr. W. D. Barnes.
Mr. H. Lake.
Mr. J. Salmon.
Mr. W. H. Shelford.
Mr. D. G. Parkes.
Mr. J. Feilding.

Surg.-Capt. F. Smith and Mr. W. A. Pickering, C.M.G., tendered their resignation.

During the year, Journal No. 24 was published, and materials for the next number are in the hands of the printer. The Council regret that the publication of the Journal is still in arrear, but hope that steps now being taken will result in their being able in future to publish at least two numbers annually, as was formerly done.

As the old edition of the map of the Malay Peninsula is now out of print, and there are no more copies to be had, it was decided to obtain materials for the compilation of a new edition, and for this a Committee was formed. Examination shows that in the earlier edition there were many inaccuracies in the coast line, and a more correct one is being prepared from the Admiralty charts.

In answer to a circular asking for copies of new survey corrections, etc., the Committee have received a number of additional maps of various parts of the Peninsula, and more are promised shortly. These include maps of several portions of Pahang, hitherto blanks in the map; a map of Malacca; and the extreme North of the Peninsula on the borders of Siam; and a complete survey of Johor; so that it is hoped that the new edition may be a great improvement on the earlier ones.

A number of publications of kindred Societies were received and added to the Society's Library, and a copy of MASON'S "Burma" was presented by Mr. BLAGDEN.

‘STRAITS BRANCH OF THE ROYAL ASIATIC SOCIETY

Dr. Honorary Treasurer’s Cash Account from 1st January to 31st December, 1892. Cr.

		$	c			$	c.
1892.	Balance on 1st January, 1892,...	863	43	1892,	To paid for Clerk’s Salary for twelve months, ...	120	00
	By Subscriptions for 1893, ...	5	00		,, ,, for Petty Expenses for twelve months, ...	26	87
	,, ,, 1892, ...	543	28		,, ,, for Despatch-box and Stationery, ...	15	08
	,, ,, 1891, ...	115	00		,, ,, Commission to Collectors 1891-2, ...	35	00
	,, ,, 1890, ..	43	00		,, ,, for Advertising in local papers, ...	11	00
	,, ,, 1889, ...	35	00		,, ,, Post Office Order for return of Subscription overpaid, ...	1	03
	,, ,, 1888, ...	15	00		,, ,, new Almeirah for Library,	28	00
	,, ,, 1887, ...	20	00		,, ,, Cheque Books and Discount on Cheques, &c.,	2	53
	,, ,, 1886, ...	5	00		,, ,, Zincographing 460 Copies of Sketch Map, ...	33	00
	,, Preceeds of Sales of Map of the Malay Peninsula, ...	280	00		,, ,, Koh Yew Hean Press for Paper, ...	114	00
	,, Proceeds of Sales of Journals,	61	75				
	,, Proceeds of Sales of “Hikayat Abdullah,”	2	00				
	,, Interest on Credit Balances with Banks, ...	26	44				
	,, Discount of 5 per cent on Sationery Bill, ...	0	11				
	Carried forward,...	2,015	01		*Carried forward,...*	386	51

Honorary Treasurer's Cash Account from 1st January to31st December, 1892,—*Continued.*

		$ c.			$ c.
1892.	*Brought forward,* ...	2,015 01	1892.	*Brought forward* ...	386 51
				To paid for setting up Journal No. 24	132 00
				,, ,, Hire of Chronometer for one month, ...	12 00
				Balance in Chartered Bank on 31 December, 1892 ...	1,075 89
				Balance in Chartered Mercantile Bank on 31st December, 1892,	397 03
				Balance with Honorary Treasurer ...	11 58
	$	2,015 01		$	2,015 01

SINGAPORE,
25th January, 1893

H. T. HAUGHTON.
Honorary Treasurer.

RULES

OF THE

STRAITS ASIATIC SOCIETY.

——— :o: ———

I.—Name and Objects.

1. The name of the Society shall be "THE STRAITS ASIATIC SOCIETY."

2. The objects of the Society shall be—
    - *a.* The investigation of subjects connected with the Straits of Malacca and the neighbouring Countries.
    - *b.* The Publication of papers in a Journal.
    - *c.* The formation of a Library of books bearing on the objects of the Society.

II.—Membership.

3. Members shall be classed as Ordinary and Honorary.

4. Ordinary Members shall pay an annual subscription of $5, payable in advance on the 1st January of each year.

5. Honorary Members shall pay no subscription.

6. On or about the 30th June of every year, the Honorary Treasurer shall prepare a list of those Members whose subscriptions for the current year remain unpaid, and such persons shall be deemed to have resigned their membership. But the operation of this rule, in any particular case, may be suspended by a vote of the Council of the Society.

7. Candidates for admission as Members shall be proposed by one and seconded by another Member of the Society, and if agreed to by a majority of the Council shall be deemed to be duly elected.

8. Honorary Members must be proposed for election by the Council at a general meeting of the Society.

III.—Officers.

9. The Officers of the Society shall be :—
A President ;
Two Vice-Presidents, one of whom shall be selected from amongst the members resident in Penang ;
An Honorary Secretary and Librarian ;
An Honorary Treasurer ; and
Five Councillors.

Those Officers shall hold office until their successors are chosen.

10. Vacancies in the above offices shall be filled for the current year by a vote of the remaining Officers.

IV.—Council.

11. The Council of the Society shall be composed of the Officers for the current year, and its duties shall be :—

a. To administer the affairs, property and trusts of the Society.
b. To elect Ordinary Members, and recommend Honorary Members for election by the Society.
c. To decide on the eligibility of papers to be read before general meetings.
d. To select papers for publication in the Journal, and to supervise the printing and distribution of the said Journal.
e. To select and purchase books for the Library.
f. To accept or decline donations on behalf of the Society.
g. To present to the Annual Meeting at the expiration of their term of office a Report of the proceedings and condition of the Society.

12. The Council shall meet for the transaction of business once a month, or oftener if necessary. At Council meetings, three Officers shall constitute a quorum.

13. The Council shall have authority subject to confirmation by a general meeting, to make and enforce such by-laws and regulations for the proper conduct of the Society's affairs as may, from time to time, be expedient.

V.—Meetings.

14. The Annual General Meeting shall be held in January of each year.

15. General Meetings shall be held, when practicable, once in every month, and oftener if expedient, at such hour as the Council may appoint.

16. At Meetings of the Society, eleven members shall form a quorum for the transaction of business.

17. At all Meetings, the Chairman shall, in case of an equality of votes, be entitled to a casting vote in addition to his own.

18. At the Annual General Meeting, the Council shall present a Report for the preceding year, and the Treasurer shall render an account of the financial condition of the Society. Officers for the current year shall also be chosen.

19. The work of Ordinary General Meetings shall be the transaction of routine business, the reading of papers approved by the Council, and the discussion of topics connected with the general objects of the Society.

20. Notice of the subjects intended to be introduced for discussion by any Member of the Society should be handed in to the Secretary before the Meeting.

Visitors may be admitted to the Meetings of the Society, but no one who is not a Member shall be allowed to address the Meeting, except by invitation or permission of the Chairman.

VI.—Publications of the Society.

21. A Journal shall be published, when practicable, every six months, under the supervision of the Council. It shall comprise a selection of the papers read before the Society, the Report of the Council and Treasurer, and such other matter as the Council may deem it expedient to publish.

22. Every member of the Society shall be entitled to one copy of the Journal, deliverable at the place of publication. The Council shall have power to present copies to other Societies and to distinguished individuals, and the remaining copies shall be sold at such prices as the Council shall, from time to time direct.

23. Twenty-four copies of each paper published in the Journal shall be placed at the disposal of the Author.

24. The Council shall have power to sanction the publication in a separate form, of papers or documents laid before the Society, if in their opinion practicable and expedient.

VII.—Popular Lectures.

25. Occasional Popular Lectures upon literary or scientific subject may be delivered, under the sanction of the Council on evenings other than those appointed for General Meetings of the Society.

VIII.—Amendments.

26. Amendments to these Rules must be proposed in writing to the Council, who shall, after notice given, lay them before a General Meeting of the Society. A Committee of Resident Members shall thereupon be appointed, in conjunction with the Council, to report on the proposed Amendments to the General Meeting next ensuing, when a decision may be taken.

A Journey to the Source of the Indau.

BY

H. W. LAKE.

ON August 2nd, 1891, in pursuance of instructions received from H. H. the Sultan of Johor, I left Johor Baharu on the Government Steamer *Pulai*, bound for Kuala Indau. One of the objects of the party of which I was in charge was to determine more exactly, if possible, the source of the Indau River.

Existing maps, notably that published under the auspices of the Straits Branch of the Royal Asiatic Society, show the Indau as a comparatively small river, having its source a little beyond Mount Janing, in Johor Territory, and emptying itself into the China Sea in Lat 2° 40′ 0″ and Long. 103° 36′ 10″.

In 1879, Mr. D. F. A. HERVEY explored the Indau Sembrong, a large tributary of the Indau proper, and afterwards published a most interesting account of his journey in the Journal of the Asiatic Society.

In 1875 VON MIKLUCHO MACLAY went up the Indau to Mount Janing, from thence, however, he appears to have turned seawards to Pekan.

Some few other Europeans have, I believe, penetrated as far as Mount Janing: beyond this point, however, nothing definite seems to have been known either of the course of the Indau, or the topography of the hill country where it takes its rise.

Owing to special work, which necessitated our calling at the Sedili Rivers, the *Pulai* did not arrive off Kuala Indau until August 11th.

On the North bank at the Kuala, there is a Police Station flying the Sultan of Pahang's flag, whilst on the opposite bank is Kampong Padang, the residence of the Sultan of Johor's *Naib*, or officer in charge. The coast just here is low and sandy, and a bar at the Kuala prevents steamers of any tonnage from entering the inner harbour. The village of Padang numbers about 500 Malay inhabitants, with a few Chinese merchants and shop-keepers. The trade with Singapore, which is small but growing, consists chiefly in the export of damar, rotans, getah and kapur barus (camphor wood).

On August 13th, I proceeded up-stream with a small party of Malays in *jalors* (dug-out canoes). For the first few miles the Indau averages $\frac{1}{3}$ of a mile in width, the banks are low and the country somewhat swampy. There are numerous small clearings on either bank, but very little cultivated land. Steamers of light draught can easily run up as far as Kuala Sembrong, a distance of 30 miles from Padang.

The junction of the Indau and Indau Sembrong was reached early on the morning of the 14th. Near this point is a small group of hills, the principal summits of which, are known as Bukit Tanah Abang and Bukit Langkap. The former hill is composed of granite, with, on the lower slopes, an overburden of white and yellow clays. Here I found a little cassiterite (tin ore) in small waterworn grains.

At the Station at Kuala Sembrong I obtained the assistance of the Malay *Batin* of Jakuns, and, accompanied by him, proceeded in a North-West direction along the Upper Indau to Batu Gajah, a Jakun village on the Johor bank, about 22 miles above the Sembrong. Here a camp was established, in order to enable the *Batin* to collect a sufficient number of aborigines to take myself and party up to the source. The river at this point is shallow and winding with a pebbly bed and high banks covered with fine timber.

But little is known of the Jakuns of the Upper Indau. They are in most cases darker and smaller than the ordinary Malay, and appear to present anthropological characteristics similar to those of the Orang Sakai described by MACLAY. A certain amount of crossing has probably rendered the Indau type of aborigine less distinct, for instance, their hair does not curl so closely as that of the true Sakai and in some cases it is quite straight.

In the neighbourhood of Batu Gajah, about one hundred men, women and children live, three or four families sharing the same one-roomed hut. They subsist mainly on *ubi kayu* (tapioca root), fruits and fish, with a little rice which they obtain, together with salt and tobacco, from Malay traders, in exchange for rotan, damar, getah and camphor wood. I was informed by the *Batin* that during the greater portion of the year when dispersed in search of jungle products, these people live entirely on *ubi kayu* and fruit.

Most of the men carry long spears, but none of them appear to use the *sumpitan* or blowpipe, which with its poisoned darts is so common amongst the aborigines of the Keratong and Jekati Rivers.

The increasing intercourse with the Malays is most strikingly exemplified in the dying out of the aboriginal tongue, which on the Indau has become a mere dialect, two-thirds at least of the words being apparently either Malay or of Malay origin. They have not yet, however, adopted the Mohammedan religion.

On the Sungei Mas, which flows from the West and enters the Indau about nine miles above Kuala Sembrong, is another Jakun settlement consisting of about 30 men with nearly 100 women and children; they cultivate a little paddy, but in other respects are similar to those previously described.

On arriving at Batu Gajah I had some difficulty in getting the Malay boatmen to camp on the river bank, as they assured me that there were many tigers in the neighbourhood. At first I paid no attention to this and was anything but impressed when a cry of *rimau! rimau!!* roused everybody at midnight. The alarm proved a false one, having apparently originated in the fertile brain of a boatman who had supped recklessly on underdone *ubi kayu.*

Next day, however, two Jakuns were brought in very badly mauled by a tiger. They stated that they had been attacked whilst asleep on a sandbank some distance up the river; one man's scalp wounds I judged to be of a fatal nature, the other, a youngster, was badly bitten in the forearm. They both refused to be treated by an European, and later in the day I saw them lying in the blazing sun with their wounds well smeared with wood ashes and wrapped in leaves. After this occurrence we found the tiger traps, consisting of a bamboo spear set across the paths, after the manner of a spring gun, a great deal more alarming than the idea of the tigers themselves, and that same evening a man was fatally wounded in the thigh by carelessly stepping across a trap of this kind.

I took advantage of the delay at Batu Gajah to ascend Gunong Janing. This mountain is situated on the left bank of the Indau, and is consequently in Johor territory. The ascent commences from the river bank and is at first fairly easy. The last few hundred feet, however, is as steep as it well can be without being absolutely perpendicular, and in many places the Jakuns had to build ladders of poles lashed with rotan.

The height of Janing, determined by aneroid barometer, is 1,950 feet. As far as I was enabled to judge, the mountain is largely if not entirely composed of a coarse whitish sandstone which crops out here and there in wall-like masses. The summit is densely wooded, and it was only by building a ladder to the top of a tall tree that a complete view of the surrounding country could be obtained.

Janing appears to be the chief of a small group of hills which rise on either bank of the Indau; Kendok, a long ridge-like hill, lies opposite Janing on the Pahang bank.

Away to the South on the verge of the horizon are the Belumut hills with the two chief summits—Gunong Belumut and Gunong Chemundong—distinctly visible.

To the North and North-East lies the jungle-covered plain of the Rumpin River, with the sea beyond, whilst to the North-West a confused mass of hills and mountains stretch away as far as the eye can reach, amongst these is the source of the Indau.

With a field glass I could make out the long spit of sand at Kuala Indau with Tiuman Island in the offing.

On August 21st, I left Batu Gajah and proceeded up-steam, accompanied by 4 Malays and 15 Jakuns in a dozen small *jalors*. Personal baggage and equipment was cut down to a very few pounds in order to enable us to carry sufficient rice to last a month at least. Mount Janing was soon left behind, and at noon on the same day the first *jeram*, or rapid, was reached. Progress now became very slow, as *jeram* followed *jeram* in rapid succession; at each of these the canoes had to be unloaded and dragged over the rocks, whilst the stores were carried along the shore or borne on the heads of the natives, who were at times breast deep in the water. Many of the *jerams* are really small waterfalls over which the river rushes with considerable force. Several times the canoes were torn from the hauling ropes of rotan, and swamped, and in one or two cases stove in, I believe, so that before the close of the first day of this sort of work, there was not a single package of stores that had not been under water at least two or three times. We had now entered a hilly country and the river became rockier and more winding every hour.

The geology of this region appears to be very simple.

A granite bed rock overlaid by a series of clays and clay shales, traversed by many dykes of quartz felsite, and quartz porphyry, with here and there irregularly intruded masses of felsite, diorite, trachyte and other felspathic rocks.

The *jerams* are in most cases formed by outcropping masses of quartz felsite, some few, however, are of granite and granite porphyry. Many of the hills are distinctly conical, notably Gunong Berumbun and Bukit Tenegon which rise abruptly from the Pahang bank.

From Mount Janing onwards the country on either side of the river, presents one mass of hilly uninhabited jungle.

On the afternoon of the 23rd, we reached the highest point navigable by small canoes. Hear the Indau is simply a broad shallow stream heaped up with boulders of granite felsite and diorite, we, therefore, abandoned the boats and continued the journey on foot, cutting a path along the bank or more frequently wading in the bed of the stream; heavy loads and torrents of rain made matters somewhat trying for the next few days. The hills now rapidly closed in on every side and the course of the stream lay in a narrow rocky ravine. At a point about 30 miles above Mount Janing, an old jungle path leads in a Westerly direction across the hills to the plain of Tenang, in the Segamat district, one long day's march for men without loads. Two days' journey towards the South-West brought us to the base of Gunong Besar and Gunong Chabang-tiga. At this point there is an extremely picturesque little waterfall, the stream falling over a mass of granite rocks nearly 40 feet high; here also are two huge boulders of granite which may serve future travellers as a landmark. Above the waterfall the Indau becomes a mere mountain rivulet with numerous tiny tributaries. The actual source is on the Eastern slope of a lofty ridge (1,800 feet above sea level) which connects Gunong Besar on the North with Gunong Chabang-tiga on the South. The formation here is a stiff yellow clay overlying the granitic country rock. On the Western slope of the ridge, or saddle back, is the source of the Segamat, which eventually empties itself into the Muar River. I spent several days in mapping this hill country, which does not appear to have been previously explored.

Gunong Besar is composed of a fine-grained grey granite traversed here and there by eruptive dykes and overlaid on the lower slopes with clays and clay shales. Height determined by aneroid 2,600 feet above sea level.

South of Gunong Besar and connected by the forementioned ridge is Chabang-tiga with its three granite peaks, the highest of which I estimate to be over 3,000 feet above sea level. To the North, East and South-East a small series of mountains stretch away to the horizon in one confused mass of jungle-covered peaks, ridges and chains. To the South-West lies the plain of Tenang, watered by the rivers Juassih, Tenang and Segamat, all tributaries of the Muar.

The range in which Gunong Besar and Gunong Chabang-tiga constitute the chief features, runs approximately North and South and is apparently separated from the hills to the far North and North-East by a flat tract of jungle country.

For topographical purposes, I have called this small system of hills the Tenang range, the larger portion of which lies within the Johor frontier.

On September 1st, we crossed the Tenang Hills into Ulu Segamat, from this point my work took me northwards towards Keratong and the Jekati River. Five weeks later I returned to Johor Baharu by way of Muar and the West coast.

Itinerary from Kuala Sembrong to Ulu Indau.

I have compiled the following from my journal and sketch map in the hope that it may prove useful to future travellers.

The mileage given is, of course, only approximate, still I think that the error is well under 10%. I have not thought it necessary to give any of the more precise topographical data, as it would be of little value here unless accompanied by a map of Johor. In every case when the mileage is given, it refers to the distance above Kuala Sembrong and not Kuala Indau.

Mas River.—Left bank of Indau (ascending) at 8 miles above Kuala Sembrong; mouth about 50 feet wide; source in Johor Territory. Jakun village about 2 hours' journey up.

Lemakau River.—Left bank at 18 miles; mouth about 20 feet wide; source in Johor Territory.

Batu Gajah.—Jakun village on left bank at $22\frac{1}{2}$ miles.

Mount Janing.—On left bank at $24\frac{2}{3}$ miles; height 1,950 feet; path leads up South slope to summit. Kendok hills on right bank directly opposite, highest point navigable by large canoes.

Jasing River.—Left bank at 29 miles; source in the neighbourhood of Mount Janing; Kuala about 50 feet wide, very rocky.

The first *jeram* or rapid occurs here.

Bukit Tenegon.—A conical hill near the right bank.

Keng Kim River.—Right bank at $30\frac{1}{4}$ miles; source in low hills, one day's journey distant towards the Rumpin River.

Kanu Stream.—Left bank at $32\frac{3}{4}$ miles; Gunong Berumbun on right bank some little distance inland.

Temapan River.—Right bank at 34¾ miles; mouth about 45 feet broad, very rocky; source unknown.

Danoy River.—Left bank at 35½ miles.

Lawing River.—Left bank at 36¼ miles.

Highest navigable point of Indau at 37½ miles; river very rocky. Bukit Salokris on left bank; from the Jasing River to here there are 15 distinct series of rapids of granite and porphyry.

Kemupoy River.—Left bank at 38¼ miles; source in Bukit Batu Dandan; mouth about 40 feet wide, very shallow and rocky.

Kidir Stream.—Left bank at 40¾ miles; source probably in Batu Dandan.

Granite Rocks.—Right bank at 42⅔ miles, ½ mile further up a stream comes in from the S. E. (slopes of Chabang-tiga).

Source of Indau at 44⅔ miles on a ridge about 2,800 feet above sea level.

The Tenang Hills.—The following are the chief features of this system.

The bearings and approximate distances are taken from the summit of Gunong Besar.

Gunong Besar.—Point of observation 2,500 feet high.

Bukit Salokris.—Bearing E. distance 5 miles from Gunong Besar.

Bukit Batu Dandan.—Bearing S. S. E. distance 2¾ miles, height 1,830 feet.

Gunong Selai.—Bearing South, distance 2 miles; source of Selai River a tributary of the Indau Sembrong.

Gunong Tiang.—Bearing South, distance 3 miles; height 2,230 feet.

Gunong Tenang.—Bearing South, distance 4½ miles; source of the Tenang River, a tributary of the Muar.

Gunong Chabang-tiga.—Bearing S.S.W.,

distance 1½ miles; 3 distinct peaks, height about 3,000 feet.

Gunong Pukin.—Bearing N.N.W., distance 1½ miles; source of Pukin River, a tributary of the Keratong.

Length of the Upper Indau from the source to Kuala Sembrong, 44⅔ miles, general course Easterly.

Length of the Indau from Kuala Sembrong to the sea, 30 miles, course Southerly.

Total length of river about 75 miles.

On the Dispersal of Seeds by Mammals.

BY

H. N. RIDLEY, M.A., F.L.S.

THE relations of animals to plants in the matter of fertilization has been the subject of many hundred papers and books written by various observers, especially since DARWIN published his well-known researches. But the various modifications and adaptations of the seed and fruit for distribution by animals, although of almost equal importance in the evolution of new forms, has been very much neglected. No one can avoid being struck by the observation that there are a very large number of plants in some orders, which closely resemble each other in the form and colouring of the flowers and yet differ very materially in the fruit. In many of these cases it is the necessity of special adaptation for dispersal of the seed that is the cause of the various modifications of the fruit or seed. Seeds are, as is well known, dispersed by the aid of animals, either by being swallowed by them and afterwards passed from the body at some distance from the parent plant, or by adhering to their fur or feathers and so being borne away, or by being thrown to a distance by them, as will be explained later on. Or again they may be dispersed by the aid of wind or water, being in the first instance blown far from the tree, and in the latter case being drifted away by sea or river currents; and lastly they may be scatterd by merely mechanical means, as in the explosive capsules of the Castor-oil (*Ricinus communis*), and other Euphorbiaceous plants, or by merely rolling by their own weight when falling from the top of a lofty tree.

I may here call attention to a fact which has been overlooked by some naturalists in dealing with this subject, namely, that it is of no advantage to a plant to have its seeds borne to great distances but that on the contrary it may be positively injurious. In the first place the plants may be partially or wholly unisexual, the male and female flowers being on different trees. This is especially common among East Indian jungle trees, notably in the orders Euphorbiaceæ, Sapindaceæ, and Myristicaceæ.

Now if we suppose that a flock of pigeons have swooped down upon a nutmeg tree in fruit and swallowed a quantity of the seeds, and then flown away in all directions for, say, a hundred miles before passing the seed, the plants will eventually be at so great a distance apart, that it will be impossible for the flowers of the female trees to be fertilized, and such isolated trees can never reproduce themselves.

The same observation applies to plants which require a special fertilizing insect. If the seed is borne to a district where the fertilizer does not exist, it is to all intents and purposes destroyed. In this case, however, it is possible that another fertilizer may be found who can do the work fairly well, and indeed it is rare that any plant depends on a single species of fertilizer. And lastly there is always a risk of the seeds being deposited in an unsuitable locality, if borne too far away. This, however, is obviated by the conservative habits of the agents, thus fruit pigeons which always inhabit thick jungle, even if they did travel a long way with the seeds, inasmuch as they naturally fly to thick jungle, would almost certainly drop the seed in a locality similar to the one they took it from, and in the same way wading birds carrying seeds adhering to their feathers, would in their long migratory flights pass over jungles and deserts and only stop at pools or swamps where the seeds might get planted.

In the matter of wind-dispersed seeds also it is not difficult to show, especially in the flora of the big jungles, that travelling for a long distance is of no object and indeed does not seem to be aimed at. The object aimed at is rather to sprinkle the seeds at such a distance from the parent tree that the roots of the latter may not interfere with the growth of the young plant, but not too widely to be absolutely isolated, nor on ground unsuited to the requirements of the species. It must be pointed out also that in the thick jungle where the foliage is very dense there is always a risk of the fruit when fallen resting in the branches, or in the tangled mass of creepers that mats together the branches of the big trees. It is, therefore, important that the fruits or seeds should be in many cases modified so as to avoid this accident. Besides in the case of such palms as *Pholidocarpus* and *Elaeis* where the stem is roughened by the projecting bases of the fallen leaves, there is always danger of the seeds resting in the spaces between these leaf bases and the trunk. This is usually obviated by the fruits being made edible and sought by birds, or mammals, as in the date-palms *(Phoenix)* or by the inflorescence being elongate so that the fruit is held out from the tree on long branches as in *Pholidocarpus*. The oil-palm *(Elaeis guineensis)* is not a native of Malaya, though often cultivated, and the spadix of fruit is short-stalked and hidden among the leaves, so that, unless some animal or bird devours the fruit, there is a great risk of the seed lodging among the leaf stalks, and as no bird here seems to care for the fruit, this is what often happens in trees in the Malay Peninsula. I have seen trees in the Botanic Gardens in which the spaces between the old leaf bases and the stem at the top of the trees were full of seedling oil-palms which, of course, would soon perish from want of nourishment.

In the Malay Peninsula, as elsewhere, the birds play the most important part in the dispersal of seed, but the mammals are agents also of considerable importance, and in this paper I intend to speak of their action in this work, and to compare it with that of the birds.

In the dense jungles that cover the hills of the Malay Peninsula one very soon notices that bird life gets scantier and scantier the further one penetrates them. Pigeons, hornbills and finches become scarcer, and almost entirely disappear, and even monkeys are not so abundant as one would expect.

In the woods of the Tahan valley in Pahang I have seen the ground in some places strewn with fruits of various big trees absolutely untouched by animals or birds. In such spots the struggle for dispersal must be very great, and there must be a very large number of seeds wasted. Many trees and climbers in the dense jungle fruit very heavily and one frequently finds (especially where monkeys are absent) the ground beneath these plants almost carpeted with seedlings a short time after the fall of the fruit, but on visiting the same spot a few weeks later only a few of these young plants are to be seen. Nearly all have perished, partly from overcrowding and partly from absence of light. Nor does the waste of young plants end here, for a very large proportion of those that do become trees can never push their branches through the dense mass of older trees so as to be fully exposed to the light, when alone they can flower.

The contrast between the woods of the colder climates and the jungles of the tropics is most strongly brought out by the wonderful disproportion of species in a given area. In cold climates one freqently sees woods consisting almost exclusively of one species of tree such as the beechwoods of Southern England, and the firwoods of Norway, but in a Malay forest all the trees appear to be of different species.

Indeed it is only in exceptional places which are suited to a limited number of species (such a spot, for instance, as a mangrove swamp) that one sees a large number of individuals of one species together. In the jungles, which are suited to the requirements of a great variety of species, the different individuals are isolated, for here the ground is already so thickly covered with older trees and shrubs, that there are but few vacancies to be filled up. And thus of the immense number of seeds which fall from the trees, but few can find vacant spots on which they can develope into trees.

The assistance of the wind or of the mammals or birds which dwell in the forests is used to fill up these vacancies.

The plants which make use of animals to disperse their seeds either possess juicy or fleshy eatable fruits of which the seeds are passed through the bodies of the animals unhurt, or dry nuts, or again the fruits may be adhesive either by some viscid material or by hooks or recurved bristles by which they adhere to the fur and are thus borne away.

The following are the mammalia of the Malay Peninsula which eat fruit, and probably all act to a certain extent, as some do to a very large extent, as seed dispersers:—

Quadrumana:—*Hylobates* (Wau-Wau), two species; *Semnopithecus* (Lotong), one or more; *Macacus*, two or three species; Cheiroptera (bats); *Pteropus* (Fruit-bats), two or more species. Insectivora:—*Tupaia*, several. Carnivora:—*Viverra* (civetcats), several species; *Arctictis* (Binturong) and probably *Hemigale;* the bear *Helarctos malayanus;* Rodentia *Sciurus* (Squirrels), several; *Sciuropterus* (Flying Squirrels), *Mus* (Mice and Rats), proably several. In addition to these must be added the deer, the wild pig (*Sus indicus*), the elephant, and probably the wild ox (*Bos gaurus)* and the buffalo (*Bubalus arnee*), which disperse seeds of grasses and other herbaceous plants both by swallowing seeds in the herbage they eat, and by bearing, attached to their skins, the adhesive fruits and seeds.

Quadrumana.—The monkeys haunt the big jungles wandering about in small flocks and avoiding the open country. They live chiefly on fruit, and of these they generally attack the juicy or succulent kinds, although they will occasionally eat the chestnuts and other dry fruits. The commonest species in Singapore is the Kra (*Macacus cynomolgus*) and this is one of the most important of the seed-dispersing mammals. The fruits I have chiefly seen it devouring are those of various species of *Eugenia, Baccaurea, Mangifera, Willughbeia, Dialium, Trichosanthes, Nephelium, Careya, Strychnos, Elæocarpus, Randia, Calophillum, Gardenia.* And here I will point out that the fruits eaten by mammals are usually plain green in colour and inconspicuous, and frequently of considerable size, whereas those which are intended for dispersal by birds are often scarlet, orange or yellow, more rarely blue or white and small. The reasons for this are, that the mammals move comparatively slowly through the jungle searching the fruit close at hand, for it is impossible for them to see far into the thick mass of foliage, whereas the birds moving more rapidly and at a higher elevation can detect fruit, if coloured, at a great distance and can speedily make their way to it, and that besides many of the fruit-eating mammals are nocturnal and, therefore, colour would be useless to them in the dark.

Berries and drupes are eaten whole (except for the skin) by the monkeys, if they are small, like *Nephelium*, *Zizyphus*. In these fruits the sweet pulp often adheres strongly to the stone making it so slippery that it is almost impossible to avoid swallowing the latter. *Zizyphus calophyllus*, a common creeper with small globose fruit, and the Mata-kuching (*Nephelium malaiense*) are good instances of this form of drupe. In *Baccaurea motleyana*, Hook, the Rambai, the seeds, of which there are three in a fruit inclosed in sweet pulp, are very thin, and are quite troublesome to eject.

The Malays and the Sakais in eating these fruits generally swallow the seeds even of such large drupes as the Rambutan, and I have seen in the deserted encampments of the Sakais in Pahang germinating seeds of the Rambutan which had been swallowed and had passed through their bodies. The Malays indeed say that this is the most wholesome and pleasant way of eating these fruits.

There are two forms of the fruit of the Polessan (*Nephelium mutabile*), in one of which the flesh adheres tightly to the stone, and in the other it is firmer, and readily breaks away, and can be nibbled off easily. If a monkey ate the cling-stone variety the seed would slip down its throat, while from the firmer-fleshed free-stone variety it would nibble the flesh and throw the stone away. In drupes of this kind it is essential that they should not be too large for an animal to swallow, and there is a decided advantage in the sweet pulp being very thin as it is thus more slippery and cannot be detached by biting. Many large and heavy fruits like those of the wild mangoes (*Mangifera cæsia*, *lagenifera*, *etc.*) and *Careya* are carried by the monkeys who gather them to a convenient perch to be eaten, and in doing so they frequently drop them, so that one finds large fruits partially eaten often at considerable distances from the parent tree. But the weight of these fruits has also another advantage, by preventing their lodging in the tangled mass of creepers and thick foliage which often mats the tops of the highest trees together, and causing them to fall and roll to some distance.

The *Willughbeias* are lofty climbers in the jungles. They have large dull green or yellowish inconspicuous fruits, pear-shaped or globose. The seeds are soft and enclosed in a sweet and eatable flesh, of which the monkeys are very fond. There are a number of seeds in a single fruit, and if, as sometimes happens, the fruit falls whole on the ground the seeds all germinate in the fruit, so that one finds a small cluster of plants where a fruit has fallen and decayed. After these have grown a few inches, all or nearly all perish from overcrowding, and in localities where monkeys are scarce I have seen the ground covered in places with seedlings, of which in a few weeks none are left. If, however, a flock of monkeys visits the locality when the plant is in fruit, all the best fruits are speedily devoured. Monkeys like other mammals are very greedy eaters, and when there is plenty of fruit on a *Willughbeia*, they do not entirely finish each fruit, but tear it to bits and scatter the seeds in different directions, only eating bits of it. The seeds of the *Willughbeia* are soft and comparatively tasteless, or if they have a flavour it is bitter and unpleasant, but a great many do get bitten up and destroyed by the monkeys, even if a a considerable number are detached and scattered about, unharmed.

It has been pointed out to me that *Willughbeia* seed to be satisfactorily planted must be thrown at the base of or near a big tree so that the creeper may have a support to climb on, and this is brought about in the following way. A monkey seizes a fine fruit to eat, the others of the flock immediately rush at him to take it away, he scrambles into the nearest big tree and getting into the fork or behind a big branch devours it with hurried bites for fear of being robbed, throwing the seeds at the foot of the tree up which the young plant can eventually climb.

Nearly all the *Willughbeias* and the plants of the allied genera *Melodinus* and *Leuconotis* are climbers in thick jungle, and in this case the fruits are, as above said, green, or at most tinted a little with yellow or orange. Those, however, that grow in more open country or on the exposed edges of jungles have bright yellow or orange coloured fruits.

In the heathy country bordering the Pahang River, I found a species of *Willughbeia* which bore exceedingly pleasant, small, oval fruits of a bright apricot-yellow colour and very conspicuous. It grew in low thickets in open sandy country, where monkeys do not go, as they have an objection to travelling far on the ground on account of the risks from tigers, wild cats, dogs and other enemies. The conspicuous fruited *Willughbeia* had probably developed its showy colour to attract birds, of which there were many large fruit-eating kinds, and the reduction in size of this fruit is also an assistance in dispersal as even the hornbill can hardly manage to carry a globose fruit as large as that of *Willughbeia edulis.*

The various species of *Dialium*, known to the natives as Kranji, are big trees with ovoid black pods, each containing one hard seed which is enclosed in a somewhat acid but pleasantly flavoured pithy substance. The monkeys are very fond of these and one often sees the remains of the fruit on the ground. The fruit is unfortunately relished by the monkeys before it is ripe so that very often the whole crop is gathered green by them and so destroyed, and here I may call attention to the value of acidity of unripe fruits in preventing animals from eating them too soon, which would soon exterminate the trees by destroying the seeds.

Though many of the fruits eaten by animals are sweet or pleasant to our taste, a large proportion of those very popular with monkeys are either tasteless or nauseous—often astringent in flavour to us. Some may even be poisonous as Strychnos.

Cheiroptera.—There are several kinds of fruit-eating bats in the Malay Peninsula, but of their habits little is known. The largest kind, *Pteropus edulis*, is very irregular in its appearance. In some years there are hardly any to be seen in Singapore, but some years ago there were enormous numbers roosting every day in the Garden jungle. They fly great distances and may be seen far out at sea. They eat great quantities of fruit of different kinds. *Cynopterus marginatus* is a small and very common species which during the day hides in the leaves of plantains, or palms, or, when it can, in caves. It eats fruits voraciously, especially figs (*Ficus Miquelii* and *Benjamina*), and I have seen it, or allied species, in great numbers at the Tembusu tree (*Fagrea fragrans*), *Livistona australis*, the *Nepheliums*, the Chiko (*Achras sapota*) and other trees.

It is difficult to see how these animals detect the fruit on the trees in the night, but perhaps they use the powers of smell. In any case it must be easier for them to find the fruits than for the insectivorous bats to see and catch insects at night. It appears to me that fruit-eating bats are much less intelligent than the insectivorous kinds. They are slower in flight and more constantly caught in house at night being utterly confused by the light, whereas insectivorous bats fly readily in and out.

The Malays keep these animals off from the fruit trees by attaching to the boughs the thorny *flagella* of the rattans which are collected and sold for this purpose, so that the bats in flying to the fruit get their wings entangled and torn by the thorns.

Viverridæ.—Of the greater number of the species of this group little or nothing is known as to their habits. All appear to be omnivorous, and certainly eat a very large quantity of fruit. They are nocturnal and find the fruit probably by the scent. The common civet cat or Musang (*Viverra malaccensis*) is a most destructive eater of cultivated fruit.

I have seen in its excreta the seeds of coffee, *Gnetum scandens*, *Caryota Cumingii Mimusops elengi*, and it is also very partial to the fruits of *Artocarpus rigida* and *integrifolia* (the Jack), *Diospyros discolor*, *Achras sapota*, and many other fruits.

Its habits of selecting the best coffee berries to eat is well known to planters, who often collect the seeds passed by the Musangs for cultivation, as giving stronger plants. It has a habit of dropping its excreta on open spaces, especially paths, so that the seeds passed by it can very readily grow.

The Binturong (*Arctictis binturong*) lives much on fruit.

One kept in captivity ate papayas (*Carica papaya*) and Rambais (*Baccaurea motleyana,* Hook.) swallowing the seeds and passing them apparently uninjured.

Ursidæ.—The common bear (*Helarctos malayanus*) is a nocturnal fruit-eater, and is particularly found of Durians. The fruit of the common Durian (*Durio zibethinus*) when ripe falls entire upon the ground, and when found by the bear, is torn to pieces and the seeds scattered about. The bear, however, also ascends the tree as well and helps itself to the Durians, which grow, as is well known, on the thick branches, where it can get at them.

In the wild Durian (*D. Oxleyanus*) the fruit splits on the tree and lets the seeds fall. In one wild Durian which I saw at Pekan, the flesh of the seed was pink and the capsule split so as to show the bright colour. It grew in a part of the country where there were no bears and was probably dispersed by some such bird as the hornbill.

I gave a bear a wild Durian (*Durio oblongus*) to eat. It tore it to bits with its paws and ate the aril of the seed and a good deal of the placentas, but would not eat the seed and spit it out so that it fell some way off. Another bear seeing the seed fall bit it, but did not like the taste and would not eat it. There was no particular taste to the part that the bear ate, though it was very eager to eat it, nor had the rejected seeds any taste that seemed objectionable to me.

I will here digress a little to compare the several forms of fruit of the *Durioneæ* showing their various modifications and their meaning with respect to dispersal.

In the genus *Durio*, the fruit is a thorny capsule, dull brown or green, and the seeds have a white or pink edible aril.

Durio zibethinus, L. The fruits are borne on the strong branches, on short stalks, and are strongly scented so as to be easily found at night, and are dispersed by the bear, a heavy nocturnal animal.

D. oblongus, Mast. The fruits resemble those of *zibethinus*, but are not scented. They open on the tree, and evenutally drop the seed. They are probably dispersed by birds, as the plant is a native of Singapore where there are no bears.

D. sp. has a scentless fruit with a conspicuous red aril on the seeds. There were no bears in the locality, so that it was probably dispersed by hornbills, which were abundant.

D. testudinarum, Becc., has the fruit at the base of tree. This is called Durian Karkura (Tortoise Durian) in Borneo by the natives, according to BECCARI, and is perhaps eaten by these animals.

Neesia synandra, Mast. This has a very hard woody capsule, bluish grey, not or hardly armed. Seed black, with a small yellow waxy aril. The fruit drops whole, and the seeds are protected till ripe by a quantity of pungent irritating yellow bristles lining the inner walls of the woody capsule. The aril and sometimes the whole seed is eaten by mice. (The seed falls out of the capsule when the capsule falls.)

Cœlostegia Griffithii, Mast., has a very large rather round capsule covered with thorns, and of a showy orange colour. The seeds are chesnut colour and conspicuous, with an orange waxy aril. They do not fall out of the fruit, but fall with it. I imagine that they are dispersed by the agency of birds but I found rats very partial to them.

Boschia Griffithii, Mast., a very small Durian with a conspicuous scarlet capsule, splitting on the tree, and exposing the black conspicuous seeds. The form and colouring of this remind one of the fruits of *Sterculia lævis* which is dispersed by birds. The fruits are borne on small twigs, and I have little doubt but that the seeds are scattered by birds. BECCARI gives Durian Tupai as one of the native names of the plant in Borneo, this would mean Squirrel Durian, but does not imply that squirrels eat it, *tupai* being really equivalent to *tikus* (mouse) meaning of small size, as opposed to *gajah* (elephant) which means in speaking of fruit, &c. large. Thus *Commersonia platyphylla* anders is called in Singapore Durian Tupai because the fruit looks more or less like a very small Durian.

Insectivora.—Tupaia ferruginea and other allied species although belonging to the order Insectivora are chiefly frugivorous. They appear to eat the smaller fruits such as those of

Marlea nobilis and *Eugenias* which have a firm texture and are not very hard.

Ungulata.—The Ungulates of the Malay Peninsula include the elephant; rhinoceros, one or two species; tapir, wild ox (*Bos gaurus*); deer, one or two species; mouse deer, two or more species; and the wild pig. To which must be added as a seed disperser the buffalo (*Babalus arnee*). These animals act more as scatterers of seed attached to their hair or hides, but probably also, to a certain extent, by swallowing grass-seeds in the herbage. The first four are inhabitants of the densest jungles, especially of the hill regions, and feed chiefly on the bushes and leaves of trees. They make long tracks through the dense forests, and wander often to great distances. I have seen many seedlings, apparently of some small herb, springing up in dung of elephants dropped in their tracks. The wild ox lives, to a small extent, on fruit. One brought down to Singapore ate greedily the fruits of the Sentol (*Sandoricum indicum*).

Scoparia dulcis L., is a small herb introduced accidentally from South America which has been widely scattered by the water buffalo. In Pahang, I traced it up the Pahang and Tembeling Rivers as far as the buffalo went. On sandbanks in the river where for some reason buffaloes had not gone this plant was absent, and I saw it and also *Cleome viscosa* springing from masses of buffalo-dung, in several places. Many of the smaller herbs and especially grasses and sedges must be distributed by this animal in this way, and *Fimbristylis miliacea*, a sedge very abundant in marshes where these animals go is called by the Malays *Rumput Tahi Kerbau* (buffalo's dung grass) for this reason.

Rodentia.—The important seed distributors in the family are the rats and the squirrels.

The rats and mice of the Malay Peninsula are as yet very little known. I have seen at the foot of Mount Ophir, in dense jungle by a stream, a large reddish rat eating the fallen fruit of a wild species of mango, of which it might easily have borne off fruits to its holes under the boulders to some distance from the tree.

There are a great number of herbaceous plants, the fruits of which are more or less concealed among the leaves or in the ground. Such is *Curculigo sumatrana* which has small inconspicuous sweet fruits with very small seeds. These disappear as soon as ripe, and are certainly eaten by some rodent. The *Scitamineæ* again have fruits which are much sought by these little animals. Most of the jungle loving species have the fruits at the base of the stems as *Amomum, Zingiber.*

The fruits are inconspicuous, but in many cases the bracts which enclose them are red. This colouring, however, bears rather a relation to the floral stage of development and is intended to make the flowers more conspicuous to the insect fertilizer. When the plant is in fruit, the bracts have usually become shabby and inconspicuous.

Nicolaia hemisphærica and *Amomum laterale* are two species which have plain green fruits, in the former in a head on a short, stout stem, in the latter in a stout, cylindric, lateral spike about a foot above the ground. These fruits are devoured by some rodent (probably a squirrel) as soon as they are ripe.

There is a great contrast between the fruits of these jungle gingers where the inflorescence is a compact head and radical or low down, and those which live in more open country and possess terminal inflorescence. In the former the fruits are inconspicuous and often green, while in the latter they are either showy and orange as in the *Alpinias* of the river banks, or they are white in the plants of the open jungle as in the case of *Clinogyne* and *Alpinia galanga.*

The squirrels (*Sciurus*) probably disperse more seeds than the *Muridæ*, and being diurnal can more easily be seen at work. They do not, as a rule, eat sweet or juicy fruits, but those of firmer texture, as those of the Daroo (*Sideroxylon sundaicum*), *Marlea nobilis*, and *Pyrenaria acuminata.* All these are inconspicuous, small, green fruits containing hard seeds, and it is very common to find gnawn fruits lying some way off from the trees, usually with the seeds uninjured. In many cases a tree is completely denuded of fruit as fast as it is ripe, and the squirrels carry it so far that it is impossible to find any. To some of the introduced fruits they are very destructive especially to cocoa (*Theobroma cacoa*) and to coco-nuts, destroying the latter by biting round holes into the fruit and eating the interior, so that trees near jungle, if unprotected, lose all their fruits.

But it is on the fruits of oaks and chestnuts that these animals chiefly live. These trees fruit very heavily, more so than any class of tree here, and the ground beneath an oak in fruit is often covered with acorns. The chestnuts (*Castanopsis*) nearly all have their fruit arranged in close spikes and usually covered with a prickly involucre. The whole spike readily breaks off the tree, but it is difficult to separate the individual chestnuts. A squirrel seizes a spike and breaks it off, and holding it in its paws attempts to nibble through the prickly husk to eat the fruit and it often happens that owing to the prickles being too sharp for it, it drops the whole spike before it has succeeded in eating more than one nut.

The squirrels invariably, if possible, when they have gathered one of these fruits run to a short distance to eat it conveniently, so that the nut or acorn may be carried to some distance before it is dropped. The big *Sciurus bicolor* is an entirely arboreal squirrel living in very dense jungle and very rarely if ever coming down to the ground, and when it takes a fruit it runs to a suitable spot to devour it. It sits transversely on the bough, holding on with its hind feet, its head and forearms hanging down over the bough on one side and its tail on the other. In this position it is very likely to drop a nut either too prickly or too smooth for it to hold fast. The smaller squirrels (*Sc. notatus* and *Sc. tenuis*) when they descend the trees to pick up the fallen acorns or chestnuts, which *Sc. bicolor* never does, always run up an adjacent tree to eat them, and I have frequently seen one carry an acorn in its mouth for some distance before eating it. I recently saw a small red-bellied squirrel (*Sc. notatus*) eating the fruits of an *Elæocarpus*. When it took a fruit, it hung head downward from a bough by its hind feet only. *Sc. tenuis* too usually hangs from the trunk of a tree by its hind feet head downwards when eating acorns. As there is no season here when a squirrel cannot get food, it never stores up seeds in holes as the English squirrel does for the winter. Among the oaks, which are more abundant than the chestnuts, there seems at first sight even less protection for the seed or means for its dispersal than for the latter, but there are certain slight modifications which have a most important effect in these matters. The acorn is nearly always quite exposed, and the cup, which corresponds to the involucre of the chestnut, is not armed, although in some species it is roughened with soft hooks (*Quercus hystrix*).

If one examines the acorns which have fallen from a tree where there are many squirrels, one notices that they are all nibbled at the base, and there are often marks of teeth as of ineffectual bites on the sides. I gave a *Sciurus bicolor* some acorns of *Quercus lucida*, a large rounded acorn with a thick but shallow cup. Taking them between its paws, it made an attempt to bite into the side of the acorn, but the outer coat was so smooth that its teeth slipped and it could not get a hold. It then turned the acorn round and bit the cup, and the acorn immediately fell out of the cup and rolled away. Had it been up in a tree when it tried to eat the acorn, the fruit would have fallen down and rolled perhaps far from the parent tree. On giving it the acorn again it began to bite the rim at its base, but it was clear that the smooth polished surface of the fruit was too slippery for its paws, and even on the floor of its cage it had some trouble in holding it.

Many of the acorns have a fairly firm outer coat thus polished, and fall very readily from the cup when ripe, but some such as *Q. encleisocarpa*, and *Q. Cantleyi*, two of our commonest species, have an improvement on this. The acorn is coated with a very fine silk, which has almost a greasy feel. It is not at all easy for a squirrel to hold these in its paws to eat, and it is very common to see the acorns of the former scattered all over a wood in which there is a tree in fruit, and nearly all of these bear the marks of squirrels' teeth, but for all practical purposes are unhurt. *Q. encleisocarpa* has the cup in the form of a thin brown covering, from which, though it is much cracked and split when ripe, the acorn never falls. In *Q. Cantleyi* the acorn is readily detached from its cup and is most difficult for a squirrel to hold. It can take it in its mouth by the aid of the raised circular rim at the bottom and thus carry it off, but to eat it it must hold the slippery conical portion in its paws so as to nibble at the base, the only place where its teeth can get a purchase, and it naturally lets many of these silky-coated acorns slip unhurt from its grasp.

The method of dispersal is a very expensive one, a large proportion of seeds being destroyed by the squirrels, compared with those that are deposited by them in suitable positions for development into trees, but so large is the crop produced at one time that the number safely planted is quite sufficient to keep up the stock. It must be remembered too that it is necessary for the trees to supply enough nuts to tempt the squirrels. If the squirrels did not get enough off the trees to eat or these seeds were so well protected that they could not get at them, they would be less likely to visit the trees at all and indeed where there are few or no squirrels, as in the hill forests, oaks and chestnuts are much more scanty than in the low country where they abound.

WALLACE (Tropical Nature, ed. 1891, p. 400,) says of most of the plants whose large seeded nuts cannot be eaten without destroying their germinating power :—"It is a suggestive fact that they are among the most ancient of known dicotyledonous plants—oaks and beeches going back to to the cretaceous period with little change of type so that it is not improbable that they are older than any fruit-eating mammal adapted to feed upon their fruits."

Still in the prickly husk of the chestnut, and in the smooth polished or silky exterior of the acorns, we see that these fruits have undergone modifications by which the little enemies have been prevented from exterminating the trees, and have been utilized as dispersers of the seeds.

Very much remains to be observed still as to the action of fruit-eating mammalia as seed-dispersers. Many of them are difficult to watch in a wild state on account of their shyness and nocturnal habits, and even in Malaya there are several such as the Loris (*Nycticebus tardigradus*), the Galago

(*Galeopithecus volans*) (which, however, certainly lives very largely and possibly altogether on leaves), the Binturong (*Arctictis*), the larger *Viverras*, *Hemigale*, *Paradoxurus*, and the fruit-bats, of the habits of which in wild state little or nothing is known. But I think it may be noticed that the fruits especially sought by mammals are inconspicuous and dull-coloured and not brilliant. This, however, must not be held to imply that bright colours are not visible to the diurnal mammals such as monkeys. Sir JOHN LUBBOCK has used the argument of the coloured fruits forming the food of monkeys against the theory of MAGNUS, GEIGER and GLADSTONE that the ancients were colour blind, saying that "if monkeys and apes could distinguish colours surely we may infer that even the most savage of men could do so too." (Flowers, Fruits and leaves, p. 74.) There is, however, no doubt on other grounds, notably the brilliant colours of the males of some monkeys themselves, that monkeys are not colour blind, while the fact that the Malays have fewer names for colours than they can see, and the Pahang Sakais, as Mr. CLIFFORD has shown in the last number of the Journal, have only three names for colours—black, white and red—although they can apparently distinguish others, entirely negatives the colour-blind theories, which are but another example of the worthlessness of ethnological deductions based on the study of ancient literature only, unsupplemented by comparison with the characteristics of modern savages.

List of plants, the seeds of which are certainly dispersed by mammals.

Adinandra dumosa. Fruit white, with small seeds. Eaten by bats.

Durio zibethinus, L. By bears.

Neesia synandra Mast. Seeds with eatably yellow aril. Mice.

Canarium rufum and other species. Fruits green or dull purple with a turpentiney or sweet taste. Eaten by monkeys. A single large seed protected by an excessively hard shell.

Calophyllum pulcherrimum and other small fruited kinds

Fruits green with a hard seed. Bats and monkeys.

Elæocarpus. Fruit green or blue. Stone hard. Monkeys.

Pyrenaria. Fruit green. Seeds hard. Monkeys, squirrels.

Parinarium Griffithii, Hook. Fruits firm dull purplish. A large hard seed. Monkeys.

Strombosia javanica, Bl. Fruit green. Stone hard. Squirrels.

Mangifera. Fruit green, yellowish or grey, large. Stone hard. Rats.

Nephelium. Mostly dull coloured. Civets, monkeys, bats.

Xerospermum. Fruit yellow. do.

Lansium domesticum, Jack. *Langsat.* Fruit whitish. Seed covered with sweet pulp. Civets.

Dialium. Fruit black. Seeds hard. Monkeys.

Eugenia grandis, Willd. Fruit green. Stone hard. Monkeys, squirrels.

E. scoparia, Wall. Fruit blue. Stone hard. Monkeys, squirrels.

E. malaccensis, L. Pink or white. Stone hard. Monkeys, civets.

Careya arborea. Large green fruits. Monkeys.

Psidium guava, L. Fruit green. Seeds small and hard. Civets.

Barringtonia racemosa. Fruits modified for sea-travelling, but I have seen a squirrel run off with one to some distance. They are dull green with a large stone.

Melothria, *Mukia* and other small terrestrial *Cucurbitaceæ.* Fruits usually dull green. With many hard seeds. Eaten by rats.

Marlea nobilis, C. B. Clarke. Fruits green, hard stone. Squirrel, tupaia.

Citrus aurantium, L. Fruit orange, usually green when ripe in the tropics. Monkeys, civets (Opossum in Brazil).

Coffea. Berries red. Seeds hard enclosed in a thin sweet pulp. Civets, monkeys.

Gardenia Griffithii, Hook. Capsule green, full of flat seeds in a sweet pulp. Monkeys.

Randia anisophylla, Do. do.

Dichopsis obovata, C. B. Clarke. Fruit green passing into orange. Seed hard. Monkeys.

Sideroxylon sundaicum. Fruit green. Seed hard, polished. Squirrels.

Mimusops elengi, L. Fruit orange. Civets (also birds).

Achras sapota, L. Fruit brown. Seed hard, polished. Civets, bats.

Diospyros discolor. Fruit pink, dull and inconspicuous. Scented Civets.

Willughbeia. Fruit green. Monkeys.

Strychnos Tiente. Fruit green. Seeds poisonous, imbedded in a sweet pulp. Monkeys.

Fagræa fragrans. Fruit orange. Usually eaten by birds, but also by bats.

Baccaurea Motleyana, Hook. Fruit white. Monkeys, squirrels.

Laurinea sp. Small inconspicuous, green fruit. Hard seed. Monkeys.

Artocarpus rigida, Bl. Yellow. Fruits large yellow, inconspicuous. Seeds small enclosed in a sweet orange pulp. Civets.

Ficus (Figs). Inconspicuous fruited kinds, *e.g.*, *F. Miquelii F. Benjamina.* Bats, also more rarely monkeys and also birds.

Quercus, *Castanopsis.* Fruit inconspicuous. Squirrels, more rarely monkeys.

Gnetum scandens, Bl. Fruit orange. Hard seed. Civets.

Amomum. Fruit usually inconspicuous, Squirrels, rats.
Zingiber. Do. do.

Musa. Wild plantain. Fruit green, inconspicuous. Seeds small, hard. Monkeys.

Curculigo. Fruit inconspicuous, hidden. Probably eaten by mice.

Livistona. Fruit black. Seed large hard. Bats.

Caryota. Fruit dark red. Seed hard. Civets.

Zalacca. Fruit brown, acid. Seed large hard. Rats or squirrels.

Calami. Fruit brown or yellow. Seed hard, covered with thin pulp. Apparently eaten by squirrels, very speedily taken, the nibbled skin only left.

Scirpodendron. This aberrant *Sedge* has its inconspicuous fruits always nibbled by some small mammal.

ADHESIVE FRUITS DISTRIBUTED BY MAMMALS

In the Malay Peninsula there are fewer plants furnished with means of adhesion to fur or feather than in many parts of the world. This is owing to the limited amount of open country, the greater part of this region being covered thickly with a dense jungle of lofty trees. For the greater part of the adhesive fruits belong to herbs, or half-shrubby plants living in flat, open country. Of such as we do find here, a number are aliens more or less accidentally introduced, such are the white Plumbago (*Plumbago zeylanica*, L.), *Urena lobata*, the sensitive plant (*Mimosa pudica*, L.), *Triumfetta*, and *Paspalum conjugatum*, L. Nearly all of these are carried about by man or domestic animals.

In *Plumbago zeylanica*, L. the calyx which encloses the capsule is provided with sticky hairs, which readily adhere to clothes or fur. The plant is common in villages, but I never saw it at any distance from cultivation. In *Triumfetta*, a roadside weed, the capsule is provided with hooks.

Paspalum conjugatum is a common grass, the very small spikelets of which are rounded and edged with short, bristly hairs. They are very easily detached from the rachis on which they are arranged, and attach themselves readily especially in wet weather to clothes, &c. This grass has travelled further than any of the introduced weeds throughout the Peninsula. I have found it growing in crevices of rocks in the Tahan River as far as I have been, and on Padang Batu on Mount Ophir, I saw a plant growing at the stream close to the camping ground, at the spot where the natives who visit the spot are accustomed to bathe and wash their clothes. A very long way from the flat country where it is abundant.

In *Chrysopogon aciculatus*, Beauv., commonly known here as love-grass, the spikelets are arranged in an erect panicle with slender, wiry branches each of which bears one fertile spikelet the base and one or more barren spikelets. From the bottom of the lowest spikelet projects a spur covered except on one side with stiff yellow hairs pointing upwards. When the fruit is ripe this fertile spikelet readily breaks off and adheres by its spur to cloth or the fur of an animal and is borne away. This grass is very abundant in dry open country, and forms an extensive turf in many places.

Besides these grasses, there are three species which inhabit the dense jungles, and excepting bamboos, are the only jungle grasses here. They are *Leptaspis urceolata*, Br., *Lophatherum gracile*, Brngn., and *Centotheca lappacea*, Beauv.

The first of these has a loose spreading panicle bearing curious oval spikelets, of which one of the outer glumes is, in the female flower, swollen up and entirely encloses the fruit, this outer glume is covered thickly with short but strong, abruptly hooked hairs, by which it clings very tightly to a passing animal. So adhesive is it that in brushing past it it often happens that the whole inflorescence is torn off.

In an allied species *L. cochleata*, a native of Ceylon, the spikelet is smaller and kidney-shaped with five ridges and covered in like manner with very short hooked hairs.

In *Lophatherum* the spikelets have several glumes, of which the eight terminal ones bear awns covered thickly with minute processes pointing downwards. When the fruit is ripe the awns become hooked by drying, and by this and the minute processes the spikelets can attach themselves to any animal.

In *Centotheca* not only are the branches of the panicle provided with short processes (pointing upward in this plant) but from each side of one of the upper glumes which encloses the fruit, project a double row of long, white processes by which means the whole panicle readily adheres to the clothes of man or to the fur of an animal. These two latter grasses are especially common along paths and animal tracks in the thickest jungles, but where it is too thick for animals to go easily one does not find them.

It is probable that more plants will be found which possess these adhesive fruits in the Malay Peninsula, but these will, I think, be chiefly introduced weeds. In any case the number will be very much smaller than that of plants dispersed in any other of the ways mentioned above, viz., by being swallowed by animals or birds, or being drifted by wind or water.

The part played by mammals is insignificant compared with that played by birds in the dispersal of seeds, but as has been shewn it is too important to be overlooked.

Of the great waves of evolution which in past times have altered the whole character of the Flora of the world, the first and greatest was probably that due to the appearance of pollen- and honey-seeking insects through whose agency the brilliant colours and elaborate forms of flowers were evolved. The next was due to the evolution of the frugivorous birds through whom we have obtained much of the colouring and sweetness of the fruits Through the evolution of mammals, we have also obtained many modifications of fruits, and the development of some groups of plant, notably the grasses and some of the other herbaceous plants will, I believe, be eventually shown to have borne a close relation to the evolution of the graminivorous mammals so abundant at one period of the world's history.

Account of a Trip up the Pahang, Tembeling, and Tahan Rivers, and an Attempt to Reach Gunong Tahan.

OUR party, composed of Messrs. H. N. RIDLEY, Director of the Botanic Gardens, Singapore, W. DAVISON, Superintendent of the Raffles Museum, and Lieut. H. J. KELSALL, R.A., with a staff of native plant-collectors and bird-skinners, left Singapore at 3 p.m. on 23rd June, 1891, in the s.s. *Glanggi*, and arrived at Kuala Pahang about 10 a.m. on the 24th.

Leaving our men to look after the baggage we proceeded to Pekan in a steam-launch belonging to Mr. HOLE, of Pekan, that gentleman having kindly offered to take us with him, as he was returning to Pekan at once.

Arrived there, we proceeded at once to the Residency; Mr. HUGH CLIFFORD, the Acting Resident having made arrangements for our accommodation.

We found that Mr. HOLE had, in accordance with previous arrangement, despatched a boat-load of rice and other stores, with 25 coolies, to await our arrival at Kuala Tembeling. So far all was satisfactory, but we found that there was some difficulty in getting a supply of small boats, which would be necessary above Temerloh (Kuala Semantan), owing to the shallowness of the river—the season being an exceptionally dry one.

We went all round Pekan endeavouring to buy three or four boats suitable to our needs, but in vain, there were none for sale. In this difficulty Mr. HUGH CLIFFORD came to our assistance and placed at our disposal a large native built boat. His head boatman, after some little difficulty, succeeded in getting together a gang of 25 coolies, amongst whom were two Dyak lads, one of whom turned out a most useful hand in the jungle, and set them to work to caulk and clean the boats which had not been in use for some time, and consequently required overhauling.

All this delayed us in Pekan till the 28th, but the time was not altogether wasted, as we did some collecting in the immediate neighbourhood.

On the North side of river, which is here over half-a-mile wide, are extensive sandy plains interspersed with patches of heavy jungle. On the sandy portions, the trees are all much stunted and grow in small clumps or coppices, giving quite a distinctive appearance to the landscape.

Portions of these sandy tracts were riddled with the burrows of the bee-eaters (*Merops philippinus*), at the extremity of which they lay their eggs. These burrows are excavated in the hard ground and slope downwards for the first foot or so, then run more or less horizontally. Among other birds noticed were the Brahmany Kite (*Haliastur indus*), which appears to be the common kite of the southern portion of Malaya, the "Burra Burra" (*Trachycomus ochrocephalus*), one of the best songsters amongst Malayan birds; most of the common Kingfishers (the Raja Udang of the Malays), and some rarer ones (*Halcyon coromanda* and *Alcedo meningting*), a few woodpeckers and several swifts. Butterflies were not plentiful, the most noteworthy being perhaps the beautiful *Parthenes gambrisius.*

Of mammals, the only ones noticed were the common mangrove monkey, Kra of the Malays (*Macacus cynomolgus*), and several of the common squirrels (*Sciurus notatus* and *Sciurus tenuis*). Of reptiles, the large Monitor (*Hydrosaurus salvator*) and the beautiful many-coloured sand lizard.

On the 28th, everything being at last ready and being provided with letters from Mr. CLIFFORD to the Sultan asking him to render us any assistance in his power in the way of providing guides, we started up-stream about 11 a.m., being obliged to wait for night tide to get out into the main stream, Pekan being situated on a sort of loop. Mr. TOWNSON, a young Australian, accompanied us. By 5 p.m. we had reached Tanjong Bedang, and went ashore for a short time. Here we saw some peafowl, which are very plentiful all along this part of the river, and large numbers of the ground dove "Terkuku" (*Turtur tigrina*), which are exceedingly good eating, also specimens of the Burmese lapwing (*Lobivanellus) atronuchalis*, and the small Malayan hornbill (*Authracoceros convexus).* At dusk we started again meaning to travel all night, but owing to our constantly running on sand banks, with which the river abounds, we made but little progress. Our means of progression was by means of polles or *gallahs*, eight men poling at a time, four at each side.

29th June. We went ashore for an hour or two in the morning to collect but did not get anything of note ; a couple of specimens of the Eastern little Tern (*Sterna sinensis)* were shot.

The general character of the country bordering the river up as far as Kuala Tembeling is pretty much the same. Along the river bank is a strip of jungle, 100 to 200 yards wide, with frequent small villages and plantations of coco-nut, banana, and mangosteen trees. Inside of this lies a tract of open grass or swampy land, varying from 100 yards to half-a-mile in width, and beyond this comes the jungle proper. The tract of open land is in places ploughed and cultivated by the natives, who use rude wooden ploughs, which, however, do the work required of them fairly well. The draught animal is the water-buffalo (*Bos bubalus),* of which there are large herds in a semi-domesticated condition. We continued travelling by night, and made better progress than before.

30th June. We heard a Wau Wau in the early morning, the first we had noticed. We made good progress during the day, and got as far as Kuala Luit, about 50 miles from Pekan. Here we went ashore for a short time, and got specimens of *Tupaia javanica ; Cymborrhynchus macrorrhynchus* the Rouge-et-noir Broadbill, and the Malayan Falconet

(*Microhierax fringillarius*), in addition to which were noted an osprey (*Pandion haliaetus*), a night jar (*Lyncornis Temminckii*) and a jay (*Platysmurus leucopterus*). We started again at dark. and travelled during the night.

1st July. We continued steadily up-stream all day, and towards evening went ashore to collect, but got very little, we however shot a couple of hornbills (*Anthracocrus convexus*), which were very plentiful, and which are excellent eating. They are best stewed and have rich and pleasant though rather strong flavour. We always looked upon them as a great addition to our bill of fare. We travelled all night as usual, and next day, 2nd July, reached Kuala Berar about noon. Just below Kuala Berar the river was divided into two by a long sandbank, and unfortunately we took the wrong channel, and when we got to the upper end we found that the water was too shallow to allow of our boat, which did not draw more than about two feet of water, passing, so we were obliged to return down stream and follow up the other bank of the river, this time with success. This mistake delayed us more than an hour. At Kuala Berar we stopped several hours, as we wished, if possible to engage a few more men, but in this we were unsuccessful. Here we noticed in addition to birds already mentioned, the small red Kingfisher (*Ceyx rufidorsa*), the green Broadbill (*Calyptomena viridis*), the little brown Barbet (*Calorhamphus Hayi*) and the not common *Anthothreptes hypogrammica*. At 3 p.m. we started again, and at 5 p.m. had another halt at Kampong Pamum to bathe and let the men have their evening meal. At 6 p.m. we again started and got along well for some time, the river being much narrower and consequently less encumbered with sandbanks. The little tern was still plentiful, flying up and down the river. About 7 o'clock a very heavy thunderstorm came on and it became so dark that we obliged to tie up to the bank, as we could not see to proceed. The lightning was magnificent, like rivers of liquid fire running right across the sky. There was very little thunder and scarcely any rain. It was some hours before we could proceed and we did not pass Kuala Triang till dawn.

3rd July. As we knew that we should be unable to get much beyond Temerloh in our large boat, we began to look out for smaller ones and landing at Pulau Guai, where there is a straggling village, we found, after some search, one sampan which the owners, after some bargaining, let us have for $11. We shot a few birds here but nothing unusual. Taking our newly acquired boat in tow, we proceeded up-stream still looking out for boats, and presently we passed another which looked suitable but it was some time before we could find the owner who was at Mosque, it being Friday, but eventually, after some hours' delay, we agreed to give $15 for the boat and went away with it in tow. A nest of the Racket-tailed Drongo was noticed in a tree near the bank of the river. An unsuccessful attempt, owing to its being at the end of a thin branch, was made to get it. The nest is a very frail structure being a cup of open basket-work of grass stems about as large as an ordinary large breakfast cup suspended below the branch. It contained young birds and the parents resented the attempted robbery most pluckily, flying round the head of the intruder and uttering shrill screams. We halted for the night at Pualau Jelam where we saw some teal (*Dendrocygna javanica*). The night was so dark that we could not travel. About 10 a.m. on the 4th we reached Temerloh where, finding that it was impossible to get the big boat any further, we stayed the whole of that day and the next trying to get boats which, owing to the demand for them by the miners in the Ulu, were difficult to obtain. At last, however, and after a great deal of bargaining we got three of a suitable size at a fairly reasonable price.

The night before our arrival a buffalo calf had been killed by a tiger about three miles from Temerloh and the following night Mr. OWEN, the District Officer, accompanied by one of our party, sat up for some hours over the hill in the hopes that the tiger would return, but without success. The pretty striped squirrel called Tupai B'lang (*Sciurus Rafflesii*) was here very plentiful. On the 6th July, having transferred all our baggage to the small boats, seven in number, including the two small sampans we had brought from Pekan, we got under, way about 10.30 a.m. and went on steadily till 6 p.m. when we halted for the night at Tanjong Doyang, camping on a sandbank with no shelter but our mosquito curtains which we found sufficient to keep out the heavy dew. A specimen of *Sterna javanica* was seen here. Next morning (7th July) we spent an hour or two collecting before starting and got the following birds amongst others, *Drymocataphus nigricapitatus;* a brown Babbler (*Timalea nigricollis*); one of the beautiful yellow crested Woodpeckers (*Gecinus chlorolophus*); and the Malayan Falconet (*Microhierax fringillarus*). Starting at 9.30 a. m. we went on steadily till 6 p. m. when we halted and camped on a large sandbank at Pulau Changai. Here we found great tracks of elephant and crocodile on the sand and heard the peculiar cry of the Argus Pheasant, *Burong Kuang* of the Malays.

On the morning of the 8th, we went out collecting, but saw nothing of note but the large Horn-bill (*Buceros rhinoceros*), of which, however, we could not obtain specimens as they kept in the tops of the tallest trees.

During the day, the Semantan Hills were conspicuous to the West and also some limestone hills to the East and in some places the river became much narrower and deeper, flowing between rocky banks.

At 4.30 p. m. we halted at Tanjong Antan where there was a good sandbank. Here we decided to camp as it was doubtful if we would find another sandbank, it being very difficult to camp elsewhere especially where the river banks are steep. From our camp we had a fine view of the Semantan Hills over which the sun set with a fine after-glow of purple and gold.

Next morning we found tracks of elephant and obtained a few birds including a specimen of *Haliætus plumbeus,* the rare lesser sea-eagle. Several Wauwaus were also heard. About 4.30 p. m. we reached Pulau Tawar, the place of residence of the Sultan of Pahang, and camped on a sandbank, a short distance above the village. The name is rather misleading as there is no island, the village being built along the left (East) bank of the river. The banks are here about 30 feet high and steep.

The Sultan informed us that very little was known of Gunong Tahan and was not sure if there was any one who could act as a guide. However he gave us a letter to Panglima Garang YUSUF at Kuala Tembeling in whose district he thought there was a man who had once been to Gunong Tahan, but of this he was not sure. He questioned us as to our objects in going into the jungle and took much interest in an 8-bore gun we had with us, being himself a bit of a sportsman and possessing several guns.

Next day (11th July), we got to within a few miles of Kuala Tembeling which we reached early on the 12th. There we found our 25 coolies and our stores safely deposited in the Police Station.

Being told here that Kuala Tahan was only one day's journey from this place, it was arranged that Mr. KELSALL and Mr. TOWNSON should go ahead with 16 men in three boats and as much of the stores as they could carry in addition, as far as Kuala Tahan, where they would form a camp. They started at 2 p.m. and at 4.30 p.m. reached the first rapids where all hands had to be turned on to each boat in turn to drag them up. At 6 p. m., they reached Kuala Kuang where they camped for the night.

The next day they got as far as Kampong Pulau Manis and on the 14th reached Kuala Tahan, after passing several bad rapids. The largest boat was stopped about 1½ miles below Kuala Tahan by the river becoming very shallow. The other two, smaller ones, had therefore to make several trips to and fro, and by 7.30 p.m. all the baggage was safely deposited on a shingle bank about half-a-mile up the Tahan.

The Tahan is deep and still at its mouth, and is much impeded with fallen trees, and is dark and dismal looking. It, however, gets shallow very soon and opens out somewhat.

On the 16th, Mr. KELSALL returned with the three boats to Kuala Tembeling passing on the way Mr. RIDLEY who, having obtained some more small boats, and found Panglima Garang YUSUF had started on the 14th.

On the 16th, Messrs. DAVISON and KELSALL started with the remainder of the baggage, on the way they dynamited several pools in the hopes of getting some fresh fish. Nothing was got out of any of them but one, but that made up for all the rest as 35 large fish were killed in it. On the 17th, at 3 p.m., they reached Kuala Tahan. A very curious fish was here obtained, about 3 feet long with a curious humped back and two rows of teeth on its tongue. Mr. RIDLEY, accompanied by Panglima Garang YUSUF, visited the Penghulu Raja near Kuala Tahan in the hopes of obtaining a guide or at least reliable information as to the route to Gunong Tahan. He, however, was either unwilling or unable to supply guides nor could any reliable information be obtained as to the district. Indeed it appeared doubtful whether any Malays had ever been nearer to the mountain than was sufficient to see it. A number go from time to time up the Tahan valley to collect guttah and rotans, but as they go in boats the distance that they travelled is very short and probably such information as they are possessed of with reference to the Gunong Tahan is derived from the Sakais.

Gunong Tahan, we were told, could be approached by two routes, one following the river Tahan, the other the river Ketchau. By the route the mountain can probably be approached nearer but it was said that on the W. or S. W. side, from which the Ketchau takes its rise, it is exceedingly precipitous and unpracticable, while by the Tahan route it is possible to ascend. The natives further state that there is a lake or swamp from which flow the rivers Tahan and Kelantan.

On the 19th, Mr. RIDLEY, accompanied by Mr. TOWNSON, started off with four boats and fourteen men up-stream and two men were sent back to Pekan in one of the boats with an order for more rice as we found we would require more, and owing to the previous bad season, rice was hardly procurable and very expensive in Pahang. Panglima Garang YUSUF tried to get us a guide but without success. He produced an old man who was supposed to know the way to Gunong Tahan and offered to guide us there for the modest sum of $60. However as we discovered after some conversation with him that he had never been up to the mountain but had only seen it from the river we dispensed with his services. Panglima Garang YUSUF also left us at this point.

At this camp we heard for the first time a most peculiar noise which we at first attributed to horn-bills but subsequently found to be produced by a large monkey, of what species we were unable to determine, as although many attempts were made to obtain specimens, we were entirely unsuccessful owing to the extreme wariness of the monkeys. The cry commenced with a series of deep sonorous barks which gradually becoming quicker and shriller ended in a sort of unearthly laugh and then commenced again. We frequently heard these monkeys again up the Tahan valley. Here we obtained our first specimens of the pretty little chestnut-backed Forktail (*Hydrocichla ruficapillus*), the bird which frequents all the small rocky mountain streams and of which a nest was subsequently obtained. The nest which is cup-shaped is constructed of moss and lined with dead leaves and built against the almost perpendicular face of a large rock overhanging the water. For three nights in succession a beautiful specimen of that glorious butterfly (*Zeuxidia aureola*) crossed the river just below our camp at dusk, but unfortunately we did not succeed in capturing it.

On the evening of the 21st, three of the boats which Mr. RIDLEY had taken up-stream returned and we found that he had only been able to reach a point about three miles up-stream at the mouth of the Sungei Tenok beyond which point the boats could not proceed owing to the bed of the stream being choked up with boulders. In fact it was with great difficulty that Mr. RIDLEY had succeeded in getting the boats up thus far as the stream was exceedingly shallow and much encumbered with fallen trees, and owing to having to stop to make a channel for the boats, moving stones to either side and cutting through fallen logs, it took the better part of two days to accomplish this distance.

On the 22nd the three boats were again started up-stream with a second load of rice and other stores and fifteen men. There was heavy rain during the evening and the river rose some six or eight feet during the night, nearly washing away some of our stores which had been left on the shingle bank instead of being moved up to our store-house on the bank, we woke, however, just in time to save them.

On the 23rd Mr. KELSALL with three men to cut a path ascended a hill about six or seven hundred feet high about two miles N. E. of Kuala Tahan and from the top of a tree got a view of a high ranged mountain about 20 to 30 miles distant to the N. W. This was doubtless the Tahan range. It consisted of a long range running apparently N. E. and S. W. and culminating in several peaks, the highest of which was towards the N. E. end of the range and appeared to be from 8,000 to 10,000 feet high.

Mr. RIDLEY also ascended some of the hills in the neighbourhood of Kuala Tenok in the hopes of getting a view and saw a high range to the S. E. which he could not identify but owing to the density of the jungle he could not see any distance in other direction.

On the 24th, Messrs. DAVISON and KELSALL with the remaining stores proceeded to Kuala Tenok, the boats having returned the previous evening. Two men were left at Kuala Tahan in charge of stores we left behind and six coolies for whom there was no room in the boats. Owing to Mr. RIDLEY having cleared a passage for the boats and to the greater depth of water due to the heavy rain that had fallen they were able to accomplish in 4½ hours what had taken Mr. RIDLEY almost two days in spite of the fact that the boats had to be dragged over shoals almost half the distance traversed.

Finding that it was impossible to get the boats any higher up the river, Mr. RIDLEY had commenced cutting a path along the right bank.

The jungle is very thick for the most part and contains a considerable number of valuable timber trees such as Tampenis, Kayu Minyak and other dipterocarpous trees but the river is too shallow and full of rapids to allow of their being floated down in the usual way. There is also still a considerable quantity of getah percha (*Dichopsis gutta*), getah grip (*Willughbeia edulis*), besides jelutong and other gutta-producing trees of less value. Rotans of various species are also very abundant and there is much dammar.

On the 25th July, Mr. RIDLEY started off early with a few men to clear the path ahead. The rest of the men were employed most of the day making "*ambongs*" or back baskets in which to carry loads.

On the 26th, we all started early with as much baggage as the men could carry and marched about 2½ miles along the path cleared by Mr. RIDLEY. This path was in parts very bad, being steep, narrow and along the face of a hill which made the progress of the coolies with baggage very slow, and it was well on in the afternoon before the distance was accomplished.

The river here is very beautiful flowing in a narrow valley between steep jungle-covered hills rising to a height of 800 to 1,000 feet. The stream itself is full of large boulders.

Camp was formed in a small, clear space in a small ravine near the river which was the only few yards of level ground we could find. The six men we had left at Kwala Tahan to follow overtook us at this camp (Camp No. 3) soon after dark. About 7.30 p.m. it commenced to rain heavily and continued for three or four hours. We had with us three large sheets of strong linen to serve as tents and a small tent of Mr. TOWNSON. Two of these we used, the native servants had one and one was used to cover up the stores at night. These tents we found were anything but waterproof and being open at the ends the rain used to blow in and we all frequently got very wet. The coolies made *pondoks* of palm leaves for themselves each night.

On the 27th, Messrs. RIDLEY, KELSALL and TOWNSON went forward with a few men cutting a path, while Mr. DAVISON spent the day exploring the neighbourhood of the camps for birds and insects but without much success. The bulk of the men were sent back to Kuala Tenok in charge of a Mandor to bring up more stores. During the day about two miles of path were cut along the river bank and Mr. RIDLEY and his party returned to camp at 5 p.m.

The comparative absence of bird life in these jungles is most remarkable. Sometimes one would spend the whole day in search of specimens and only obtain half a dozen or so.

This is partly owing to the denseness of the foliage which renders it very difficult to see any birds that are about, and also to the fact that except quite early in the morning and for a short time in the late afternoon most of the birds are quite silent.

On the 28th July, Mr. RIDLEY accompanied by Mr. TOWNSON with a small party of men went on cutting the path, while Messrs. DAVISON and KELSALL superintended the transport of the stores from the third camp to the fourth about a mile further on. This necessitated two journeys and occupied nearly the whole day, as the path was very bad. Mr. KELSALL saw a specimen of the rare striped civet cat (*Hemigale Hardwickii)* but not having a gun could not add it to our collections.

Our rice was made up in 50-lb. bags which is the very outside a man can carry in the jungle. The direction followed was North-westerly along the bank of the river and the path was a constant series of ascents and descents over the spurs of the hills between which the river flows, and was most difficult for men carrying loads This was especially the case when small streams running into the Tahan had to be crossed. The banks of these streams are usually steep and after rain become muddy and exceedingly slippery and in many places it was only with the assistance of branches and roots that the men could get up and down with the loads. In spite of every effort being made any thing like rapid progress was impossible and it was only by the exercise of a very large amount of patience and tact that the men were got to do the amount of work they did. On one or two occasions some of the men threatened to run away and one mandor gave a great deal of trouble, not only would he not do any work himself but he did all in his power to make the other men discontented.

On the 29th, Mr. RIDLEY and Mr. TOWNSON went on as before with three or four men cutting a path while Mr. DAVIDSON and Mr. KELSALL looked after the remainder of the men, some of whom were sent back to Kuala Tenok to bring up more rice, and the rest were sent on after Mr.

RIDLEY with stores for several days so that he might form an advance camp and thus be saved the journey back to the main camp every day. A specimen of the handsome squirrel (*Sciurus insignis*) was obtained at this camp.

On the 30th of July, Mr. RIDLEY'S best plant collector who had been complaining of fever for some days was so bad that he had to be sent back to the camp at Kuala Tenok. He was so weak that he required the assistance of two men to enable him to walk. Mr. KELSALL also went back to Kuala Tenok to get some things that had been left locked up and to see this man safely back. Sakai and wild beast tracks occur on both sides of the river and these were often made use of, being enlarged for the baggage carriers. In some places trees had to be cut down to form bridges over the river and the ravines that had to be crossed in the jungle. During the whole time we were in the Tahan jungles we did not meet a single Sakai although we constantly met with evidence of their presence in the shape of rough leantos of "*pondoks*" consisting of a long pole supported at each end on a forked stick stuck in the ground against which palm leaves are leant. Other evidences were small platforms in the forks of trees, 15 or 20 feet from the ground, dead fires and on one or two occasions newly cut branches of trees. At one place Mr. RIDLEY found on the banks of the river a group of seven small huts or booths made of palm leaves tied together at the top in the shape of a bee hive and with a thick bed of palm leaves in each of them

The wild men are evidently very shy, as they never let us. catch a glimpse of them although they evidently watched us all along, and on our moving from one camp were quick to clear off all old tins and other waste which had been thrown away.

On the 31st, Mr. RIDLEY continued cutting the path and Mr. KELSALL followed him to make a rough compass sketch of the route, overtaking him not far from the 6th camp, while Mr. DAVISON superintended the coolies moving the stores on to the 5th camp. This part of the path was very bad. Mr. RIDLEY and his party during this day ascended a hill of considerable altitude on the left bank of the river and got a good view of the Tahan range—a broken ridge densely covered with trees. On one side could be seen a vertical cliff white in colour and possibly of limestone more or less clothed with vegetation and to the North rose the big peak of Gunong Tahan. It did not appear to be of the estimated height of 14,000 feet, and is probably not more than 8,000 to 10,000 feet in altitude.

On the 1st of August, Mr. RIDLEY sent back all his men to assist in bringing up stores, and the whole were brought up to the 6th camp. The next morning twelve men in charge of a mandor were sent back to Kuala Tenok to bring up all available rice and fish, the rest of the men moved everything on to the 7th camp. The road between the 6th and 7th camps was very bad being mostly along the side of a steep hill. Mr. RIDLEY had also been obliged to cut down a tree of considerable size to form a bridge over the river.

On the 3rd, Mr. RIDLEY and Mr. TOWNSON with some men went on cutting the path, and formed a fresh camp about a mile and-a-half ahead, while Mr. DAVISON and Mr. KELSALL did some collecting.

On the 4th, Mr. RIDLEY and party went on about one and-a-half or two miles and formed the 9th and what proved to be the last camp. Mr. KELSALL and Mr. DAVISON went on collecting, Mr. KELSALL going as far as a little beyond the 9th camp. The twelve men who had been sent back for rice returned this day.

The 5th and 6th were spent by Mr. RIDLEY'S party trying various routes as it appeared impossible to continue along the banks of the Tahan beyond the 9th camp owing to the steepness of the hills between which the river here flows and at last they took a well-worn Sakai track which went away in a South-westerly direction and then turned North again. This track followed roughly the direction of a small stream which falls into the Tahan from the West and which appeared to come from the slopes of Gunong Tahan. After following this track for some distance they left it and ascended a high ridge which barred further progress up the valley of the Tahan, at its lowest point.

While Mr. RIDLEY and Mr. TOWNSON were on this hill, a messsage came from Mr. DAVISON'S camp saying that Mr. KELSALL was ill, having been attacked with fever on the night of the 4th and would probably be unable to move for some days. Mr. RIDLEY and Mr. TOWNSON returned to the 7th camp on the 7th to obtain more provisions and consult as to the next step. On looking over the stores it was found that there was only enough food for five days, and as the supply that had been sent for to Pekan had not arrived at Kuala Tenok and in all probability would not do so for five or six days a retreat was decided upon.

The expedition started back on the 9th (Mr. KELSALL being carried on a raft or stretcher for two days) and reached Kuala Tenok on the 11th; the 12th was spent re-packing stores and waiting for the last of the baggage to arrive. The whole of the 13th was occupied moving down to Kuala Tahan, the river was a good deal swollen owing to the recent heavy rains, and one small boat was upset, fortunately there was nothing in it of much value. One day had to be spent at Kuala Tahan repairing the boats and constructing rafts of bamboo to convey some of the men and the collections of live plants down stream.

Pulau Tawar was reached on the 19th of August and a stay of one day was made in order to visit the limestone caves at Kota Glanggi. Some good things were obtained in the neighbourhood of the caves including a specimen of BOSCH'S beautiful ground thrush (*Pitta Boschi*) and in one of the caves, Kota Burong, a pair of long-tailed porcupines (*Hystrix longicauda*) were taken. Here also was found a nest of the forest Bee-eater (*Nyctiornis amicta*). It consists, like those of the other Bee-eaters, of a hole in the ground some two or three feet long. The eggs are pure white. Leeches were also more plentiful in these woods than we found them anywhere else.

These caves appear to be frequented by the wild men, for in all of them we found remains of fires and beds of palm leaves but of the people themselves we saw nothing.

The failure of the expedition to reach its goal was due to a variety of causes of which the chief were the difficulties of transport owing to the low state of the river and bad coolies. Food for the expedition for two months—the time allotted by the Government—was taken but owing to the want of rain the rivers were so shallow that it was with the greatest difficulty that the boats were taken up and this delayed progress greatly. Added to this were the difficulties of making our way through the Tahan jungles which were far greater than had been anticipated. The coolies who were chiefly Kelantan men proved, with a few exceptions, a very worthless lot and many of them suffered from beri-beri, fever, diarrhœa, dysentery and a most loathsome form of skin disease, known among the Malays as "*kurap.*"

Judging from recent information about this part of Pahang, the route adopted was probably not the best, as it gave us much more actual jungle work than would have been necessary had the Tembeling River been followed up to its source and a path cut from thence to Gunong Tahan.

One man can carry in the jungle but little more provisions than sufficient for fifteen men for one day, so that for ten days in the jungle away from the base of supplies ten men out of fifteen are required at the start to carry provisions and every additional day away from the base increases the difficulties of transport.

The Tahan jungles appear to be very unhealthy especially at the further points reached. Heavy rain fell here every night, and the ground was covered with decaying vegetable remains. At night frequently the whole ground round the tents was illuminated by phosphorescence, (probably bacterial) on the decaying leaves.

Unfortunately though the jungles contain plenty of game, it is not easily procurable and cannot be caught without trapping, and this, time did not permit. All the streams, however, contain plenty of fish and they can generally be obtained with the aid of dynamite.

It was hoped that some observations might have been taken that would materially increase the topographical knowledge of the Tahan region, but owing to the close nature of the country and the impossibility of getting any view, only the roughest observations could be made.

Although two out of three plant collectors were ill—one with fever, the other from an injury to his foot—for the greater part of the time in the Tahan River valley, and were, therefore, useless, the collection of herbarium specimens was very successful, over two thousand being obtained.

H. J. K.

VEGETATION OF PAHANG.

During the expedition no opportunity was lost of collecting plants, and these with the collections made in earlier visits to Pahang (in 1889 and 1890) give a very fair idea of the flora of the low country here, which was hitherto unknown.

The notes and discriptions of these plants being somewhat voluminous are published elsewhere, but a short account of the flora of Pahang, as far as we have seen it, will not, I think, be out of place.

The sea-shore at the mouth of the Pahang River and the adjoining heaths country was explored in 1890. This district, so different from any other part of the Malay Peninsula as far as we have seen, produced a number of interesting and new plants. Along the sea-shore is a single row of *Casuarinas* on whose branches grew besides lichens and fungi a curious mistletoe (*Loranthus)* with leaves and flowers of a bright orange colour. Beneath the trees the ground is covered with pink and white *Ipomeas*, the Porcupine Grass (*Spinifex*), a very small species of *Premna*, and a very pretty violet flowered *Vitex* apparently a prostrate maritime form of *V. Lagundi* which in land forms a small tree. Here and there along the coasts are patches of mangrove, but owing to the sandy nature of this district they are by no means extensive. From the shore inland and along the river on the left bank to some distance above Pekan extends the sandy heath district interspersed with woods, a very interesting region. Here are bushes of *Vacciniums* of two species, with rosy or white sweet-scented flowers and small eatable berries. *Eugenias*, *Rhodomyrtus*, the Sea Olive, (*Olea maritima*) *Ilex*, and many other shrubs, upon whose branches grow many small orchids, among which were *Eria acervata*, a new *Bulbophyllum*, *Dendrobiums*, and the beautiful climbing white spider orchid (*Renanthera alba Ridl.*) The ground is covered with grasses and sedges, and many small herbs, *Mitrasacme*, with small buff and white flowers; *Utricularias*, pink, yellow and white; the creeping blue flowered *Cyanotis*; and many others. Among the larger trees here are the Tembusu *(Fagræa fragrans)*, many figs and *Eugenias* and a magnificent specimen of the big flowered *Fagræa imperialis* was found at one spot in full bloom.

On the right bank of the river, the country is more swampy and wooded, with pools full of the pink Lotus *(Nelumbium speciosum)*, and other aquatics. Here are great clumps of *Licuala* palms (commonly called Penang Lawyers). Two new species of grass (*Rottboellia geminata Hack* and *Saccharum Ridleyi Hack*) were obtained here. The latter forms dense thickets somewhat resembling clumps of Pampas grass with erect panicles of purple flowers.

Up to Kuala Tembeling, the country on the banks of the river is open and flat, for the most part covered with low woods and grassy pastures. Further inland are bigger and denser forests, while the edge of the river is often covered with dense thickets of *Cucurbitaceæ*, *Bauhinias* with brilliant orange flowers, clumps of *Clinogyne*, with white blossoms, big *Zingiberaceæ* and many other beautiful plants. Some of the trees along this part of the river are very striking, *Cassia siamea* and *Cæsalpinia sappan* are bright with yellow flowers, *Lagerstræmias* of two species, *Cassia nodosa* with innumerable rosy blossoms, and *Millettia atropurpurea*, with its deep purple blossom give a brilliancy of colour to the banks. *Bignonia indica*, with its huge sword-like pods is very abundant especially on some of the sandy islets in the river.

The woods in the neighbourhood of Pulau Tawar proved, botanically, exceedingly rich, and many novelties were collected here, including a remarkable *Scitamineous* plant allied to *Lowia*, with five stamens, some very curious *Rubiaceous* herbs, and here the lovely *Didymocarpus quinquevulnerus*, a new species with large white flowers tipped beautifully with carmine was abundant. The limestone region of Kota Glanggi, was also a field of great interest. The rocks and adjoining woods abounded in remarkable and curious plants. *Trichopus zeylanicus*, a small herbaceous plant allied to the yams was abundant. This plant has not hitherto been collected in the Malay Peninsula, being only known from Ceylon and Southern India; *Begonias*, *Elatostemmas* and ferns, clothed the rocks, and on the higher parts were many orchids, including several new species of *Sarcochilus* and *Saccolabium*. The curious *Arisæma fimbriatum*, and several species of *Amorphophallus*, *Peperomia portulacoides* (a dwarf succulent plant not hitherto known except in Southern India), a very fine violet flowered *Calanthe* and many other plants of interest were collected here. At Kuala Tembeling a good lot of rare and curious plants were met with, both on the river banks and in the woods a little way inland, of which the most interesting were the yellow dead nettle, *Gomphostemma*, and the parasitic *Brugmansia*, one of the *Rafflesiaceæ*, (the first of this order recorded from the Malay Peninsula, although Mr. WRAY tells me he has long known of the occurrence of the *Rafflesia* itself in Perak). The *Brugmansia*, which is a native also of Borneo, was found growing on the prostrate stem of a vine, in a dense thicket of tall *Scitamineæ* on the borders of a wood, about two miles from the river.

In the more open woods here and elsewhere in this part of Pahang grows a very beautiful yellow flowered *Dillenia* well worthy of cultivation. Another interesting tree which occurred here was the "Kapayung" or " Payung," (*Pangium edule*). The fruit of this tree produces a rather coarse oil used by the natives in medicine and also for attracting fish. An old Malay fisherman, whom we met here, had a bamboo full of the pounded seeds, in the form of a dark brown oily mess. He put a little into the water of the river near a deep hole, where, after waiting a few minutes, we fired a charge of dynamite and took a fairly large number of fish.

Along the Tembeling River, the forests came down in many places closer to the water's edge, but the collections made here were more scanty as the expedition was hurrying on.

At one spot, among other plants, a new wild plantain was collected, with the flower bracts of a bright yellow instead of either violet or brown as in the two common Peninsular species.

The entrance to the Tahan River is marked by dense jungle coming down to the water's edge, and the flora here is very different to that of the Tembeling and Pahang Rivers, though some characteristic plants of this region had found their way down the former river for some way. The greater number of novelties found during the expedition were collected in the Tahan valley, among the more interesting of which were a very fine new species of *Dipterocarpus* (*D. pulcherrimus*) a big tree with hard red timber. At the time of our visit it was covered with its pink two-winged fruits. The flowers, which like those of most *Dipterocarpi* are large and creamy pink with a delicious fragrancy, were also collected. The well-known "Champedak," (*Artocarpus polyphemia*) is truly wild in these woods. "Pulawan," (*Tristania Whitiana*), with corymbs of evil-smelling white flowers was another abundant tree. Oaks and nutmegs were comparatively rare. Of palms, "Ebol" *Orania macrocladus Bl.*), "Langkap" (*Arenga obtusiloba Miq.*), *Caryota mitis Lour*, and "Bayas" (*Oncosperma horrida*) were common, and the grand "Daun Payoh" (*Teysmannia altifrons Miq.*) was met with in several places. The paddle-shaped blades of the leaf of this palm were over six feet long, and form excellent roofs for huts. Of the smaller plants there were a number of Pinangas of all sizes, Licualas, and Iguanuras, two or three Zalaccas, and a number of kinds of rattans. Along the banks of the river many of the herbs and shrubs growing nearest to the water were noticed to have peculiarly long and narrow leaves; among these were a *Calophyllum* (new), an *Ixora*, an *Antidesma*, a small fig, (*Ficus pyrifolia*), a little purple flowered *Hygrophila*, and a curious new genus of *Asclepiads*, a *Podochilus* and some aroids. These all grew on the rocks close to the water's edge, and must have been subjected to constant rushes of water when the river, as it often does, suddenly rises. In such a case as this, the broader leaved plants would suffer heavily, as the rush of the stream would tear their foliage to pieces, while narrow-leaved plants offering a less resistance would be comparatively uninjured.

Among the herbaceous plants of this region the *Didymocarpi* are most attractive, growing on banks and open spaces in the woods ; a number of different kinds were collected including the *D. quinquevulnerus* mentioned above, but the form here had the carmine spots replaced by an exquisite purple violet colour; there were also a very similar species of a dark crimson red with a yellow spot in the tube, and some white and yellow kinds. There were also a number of the smaller flowered species, violet, pink and white. Nearly all the plants of this charming group were new to science. It is remarkable how very local the species of this genus are. None of the numerous species of the Perak Hills occurred here, nor were those of the Malacca, Penang or Johor Hills seen.

Another curious little plant first found here was *Neckia*, one of the *Violaceæ*, but in no way recalling a violet. It is a little erect herb, the stem covered with brown bristles, the leaves narrow, and the flowers very fugacious, pink, on long, slender stalks. It has since been collected on Butu Pahat and Gunong Panti in Johor, but hitherto was only known from Borneo.

Among the aroids of this region, the most interesting is *Rhynchopyle*, a singular little plant abundant on rocks in the streams and watercourses. It was not previously known outside Borneo, but one and perhaps more species are common in similar places in Perak and Johor.

The Ginger family, (*Scitamineæ)* is very well represented, and several novelties were collected. At one place were tall thickets of a curious new *Phrynium* with white flowers. A pretty little turmeric (*Curcuma*) was abundant, *Elettariopsis*, with its long runners almost hidden in wet rotten sticks and throwing up solitary white flowers and globular white fruits, grew in the damp watercourses. *Zingibers*, of which the finest was *Z. spectabile* with its tall scarlet cones from which protrude curious black-veined, yellow flowers; *Amomums* of several kinds, and a *Globba* with yellow flowers and yellow or scarlet bracts, were plentiful.

A curious plant which requires investigation is *an epiphytic Pandanus* which grows in the form of a tuft often in tall trees. Plants were seen far up the Tahan River but they bore no flowers nor fruit Similar plants have been seen in Perak and in Johor where it is called "Pandan Lari." It is evidently a true *Pandanus* and not a *Freycinetia*. Orchids are abundant on the trees overhanging the river. Most conspicuous is *Grammatophyllum*, in grand flower at the time of our visit. There were also an abundance of *Dendrobiums*, *Erias*, *Bulbophylla*, *Thecostele*, *Podochili*, *Appendiculas*, *Cœlogynes*, including the lovely *C. Forstermanni*. Among the prettiest novelties were a beautiful orange *Dendrobium*, and a *Phalænopsis* in the way of *Ph. sumatrana* but with smaller flowers. The gravelly islets of the river were bright with *Arundina speciosa*, the best form with the very dark lip.

Ferns produced no novelties, but among the most conspicuous were *Dipteris Horsfieldii*, and *D. Lobbii*, *Adiantum æthiopicum*, many *Lindsayas* and *Trichomanes* and *Hymenophylla*.

The common *Selaginellas* and *Lycopodiums* were plentiful, and a number collected. A few mosses were also obtained, among which Mr. BROTHERUS (of Helsingfors) has found two novelties.

Jungle Produce.

The Pahang gutta still holds its own as one of the best class guttas in the market. The tree (*Dichopsis gutta*) is abundant in many of the upper forests and was fairly plentiful in the Tahan valley though here as elsewhere the trees are scattered often at some distance apart in the jungle. *Willughbeias*, (Getah Grip) are abundant, and we had often to cut through big lines of them in the Tahan valley. A new species of this genus with eatable apricot-coloured fruit grew in the open heath country near Pekan. Jelutong, (*Dyera costulata*, Hook.) is also plentiful.

Gaharu Wood (*Aquilaria malaccensis*) is procured from the Tahan valley as elsewhere in Pahang and specimens of the tree in fruit were collected.

Many *Dipterocarpous* trees, such as *Dipterocarpus pterygocalyx* which produces the wood-oil, (Minyak Krueng), and the *Shoreas* and *Hopeas* which produce Dammars were seen throughout the jungles.

Rattans are abundant, but near the villages we noticed comparatively few of any value. The commonest near the Pahang River is Rotan Chin-Chin, the *Dæmonorops crinitus* which appears to be little valued by the Malays. In the wilder parts, such as the Tahan valley, we met with many other and more valuable species, which had escaped the search of the natives.

All these products are collected by the Sakais and sold to the Malays who float them down the river on rafts of bamboo to Pekan where the bamboos themselves fetch a certain price as they are scarce in the lower part of the river.

Cultivation.

The Pahang Malay does but little in cultivation and the Chinese have not yet established themselves here as planters, although the soil in many places is very suitable. In Pekan a small quantity of copra is made, but the natives seem to prefer to make coco-nut sugar rather than to attempt to grow the coconuts for the fruit. Paddy is cultivated to a small extent, and very carelessly, and here and there are patches of Indian corn and Italian millet (*Panicum italicum*). Some plants of Arabian coffee very strong and free from disease were seen at Temerloh, in the garden of a Malay, who, however, was quite ignorant of the use of the berries, only using the leaves to make tea of.

The ordinary Malay vegetables and fruits were to be seen in the village gardens, but as the Pahang Malay does not care to grow more than he actually requires at the time, they were neither abundant nor very good.

Fruit trees such as Durians, Rambutans, and Pulassan were often found in dense jungle, but I doubt that any were truly wild. They seemed to be either relics of deserted villages or derived from seeds dropped in the jungles by wandering Malays and Sakais.

Of truly wild fruits, the following were seen:—

Champedak (*Artocarpus polyphemia*); Rambutan Pachat (*Xerospermum Noronhianum*); and a remarkable climber with large fruits, resembling apples in form and flavour, called Akar Panti, in the Tahan woods; Monkey-jack (*Artocarpus rigidus*), and Tampoi (*Baccaurea malayana*) in the Pulau Tawar woods, where also were trees of apparently a species of *Canarium* called Drija, of which the kernel produced an oil, apparently much sought after by the natives. And here were also fruiting trees of the Kumbang Samangko (*Sterculia scaphigera*) the seed of which when immersed in water produces a mucilage used medicinally by the Malays; Rumania (*Bouea microphylla*); various species of *Garcinia* producing the fruits known as Kandis. Asam Gelugur (*Garcinia atroviridis*) was met with in a wild or half wild state in many spots along the route. The red fruited Mangosteen (*G. hombroniana*) grew abundantly in the sandy country near Kuala Pahang, but was not in fruit at the time of our visit.

Of eatable smaller berried fruit, the Kamuning (*Rhodomyrta tomentosus*); Nasi-nasi (*Eugenia zeylanica*); Mata Pelandok (*Ardisia crenulata*); the wild raspberry (*Rubus moluccanus*) were all abundant in the open country.

H. N. R.

List of Mammals Recorded from Pahang.

[Specimens were obtained of those marked with a † .]

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1. *Hylobates albimanus*, Vig. and Horsf.
The black Wau Wau, "Ungka" of the Malays, is common in the Pahang jungles.

2. *Macacus nemestrinus*, Linn.
The Coco-nut Monkey or Berok.

3. *Macacus cynomolgus*, Schreb.
The Mangrove Monkey, or Kra is common along the Coast and for some distance up the rivers.

†4. *Semnopithecus obscurus*, Reid.
The grey Lotong. This Monkey, which is common in Pahang, varies very much in colour. Here it is of a dark grey, while further South, in Johor, it is almost black.

5. *Nycticebus tardigradus*, Waterhouse.
The slow Loris.

6. *Felis tigris*, Linn.
The tiger, "Harimau" of the Malays, appears to be widely distributed, especially in the low country, disappearing in the hills.

7. *Felis pardus*, Linn.
The leopard or panther. There is considerable difference of opinion as to whether the leopard and so-called panther are distinct species. There are two distinct forms, one, which includes the black panther, being much more thickset and heavy looking than the typical leopard and the spots are usually rings and not rosettes as in that aminal. But different specimens vary so much in shade of colour and the form and arrangement of the spots that it is by no means easy to decide.

The black variety appears to be by far the most common form in the Malay Peninsula, the yellow one being comparatively seldom met with.

8. *Felis Temminckii*, Vig. and Horsf.
The red tiger-cat. A living specimen from Pahang was for some time in the Botanical Gardens, Singapore.

There are probably several other species of wild cats found in Pahang, but there are no records of them. Tracks were often seen of small species in sandy spots.

9. *Viverricula malaccensis*, Gm.
The common Musang or small civet cat.

10. *Hemigale Hardwickii*, Less. Seen in Tahan woods.

11. *Cuon rutilans*.
The wild dog of the Malay Peninsula, called by the Malays "Anjing Utan" is said by them to hunt in packs. Living specimens have been sent down to Singapore from Pahang.

12. *Lutra leptonyx*, Gray.
The Otter. Malay "Anjing Ayer." Seen on the Tahan River.

13. *Helarctos Malayanus*.
The Malayan Honey bear. Tracks seen by the Tahan River. This little bear is easily kept in captivity and becomes exceedingly tame.

†14. *Tupaia ferruginea*, Raffl.
Malay "Tupaia tanah."

†15. *Tupaia javanica*, Horsf.

†16. *Galeopithecus volans*, Linn.
The flying lemur. Kuala Tahan.

17. *Pteropus edulis*, Gray.
The large Fruit Bat, or, as it is sometimes called, the flying Fox. Common at Pekan.

There are many other bats, but few have as yet been collected and identified.

†18. *Sciurus bicolor*, Sparr.
This very variable Squirrel is in Pahang usually of

dirty yellowish white colour, almost tawny on the back. Seen far up the Tahan River, and the Palau Tawar.

†19. *Sciurus Rafflesii*, Vig. and Horsf.
The Coco-nut Squirrel, "Tupai B'lang" of the Malays. This squirrel is most destructive amongst coco-nuts. It gnaws a round hole in the nuts to get at the inside. Common at Kuala Semantan.

†20. *Sciurus laticaudatus*, Diard.
This appears to be a rare species. Kota Glanggi.

†21. *Sciurus griseimanus*, A. M. Edwards.

†22. *Sciurus insignis*, F. Cerv. This is a pretty squirrel with three black stripes down the back. It appears to live almost entirely on the ground. Tahan River.

†23. *Sciurus notatus*, Bodd. This is perhaps the commonest of all the Malayan squirrels. Common everywhere.

†24. *Hystrix longicauda*, Marsden.
The long-tailed porcupine. Two caught in the Kota Glanggi caves.

25. *Elephas maximus*, L.
The elephant, though common all through Pahang, is never caught and tamed. Abundant in the Tahan woods.

26. *Rhinoceros sp.* Tahan River woods. Tracks seen and animal heard at night.

27. *Tapirus malayanus.* Tracks have been seen of this animal at near Temerloh.

Bos gaurus, Ham. Smith.
The S'ladang is to be met with all through the Pahang jungles, but, owing to its shy and retiring habits, is difficult of approach. Tahan woods and all down Pahang River.

28. *Bos bubalus*, Ham. Smith.
The water buffalo is common in a semi-domesticated state along the rivers. It is very doubtful if it occurs in a wild state.

9. *Menorrhaedus sumatrensis*, Shaw.

The "Kambing Utan" of the Malays. This wild goat is supposed to occur in the high mountains of the interior, but there is no record of its having been obtained.

30. *Cervulus mountjac*, Brooke.
The "Kijang" of the Malays. Kuala Tahan.

31. *Cervus equinus*. Cuv. "Rusa" or "Rusa Hitam." The Malayan Sambur, apparently the same as the Indian species, but the horns do not attain the same length. Heard at night along the Pahang River.

32. *Tragulus napu*, A. M. Edward.
The large mouse-deer.

33. *Tragulus javanicus*, A. M. Edward.
The small mouse-deer.

†34. *Sus cristatus*, Wagner.
The wild pig, common in low country; seen also far up the Tahan.

35 *Manis javanica*, Desm. The Pangolin or "Tingiling." The Scaly Armadillo. more Pramau, Pekan.

LIST OF BIRDS OBSERVED OR COLLECTED DURING TRIP IN PAHANG.

1. *Accipiter virgatus*, Temm.
This sparrow-hawk is fairly common.

2. *Haliætus leucogaster*, Gm.
The white-bellied sea eagle is common along the coast and for a considerable distance up the river.

2a. *Haliætus plumbeus*. Tembeling River.

3. *Haliastur indus*, Bodd.
The Brahmany kite or maroon kite. This, the common kite of Singapore, is also abundant in Pahang for a considerable distance up the river.

†4. *Microhierax fringillarius*, Drap.
The smallest falcon in the world, scarcely as large as a common starling. Fairly plentiful. Kuala Berar.

5. *Ketupa javanensis*, Less.
The fishing owl is found in the low lands near the Coast. Kuala Pahang.

Several other species of owl were heard, but, owing to their nocturnal habits, it is difficult to obtain specimens of these birds.

6. *Corone macrorhyncha*, Wagl.
The common crow of the coasts and open country.

7. *Corone enca*, Sharpe.
This crow is only found in the jungles and singly or in pairs.

8. *Platysmurus leucopterus*, Temm.
The white winged jay. Found in the higher jungles. Tahan woods.

9. *Oriolus xanthonotus*, Horsf.

10. *Dissemurus platurus*, Vieill.
The racquet-tailed drongo is plentiful all through the Pahang jungles. This bird is a wonderful mocking bird, and imiates the notes of many other birds.

11. *Artamides sumatrensis*, S. Müll. Pulau Tawar.

12. *Campophaga minor*, Davison.
A new species taken at Pulau Tawar.

13. *Lalage orientalis*, Bodd. Common in open country.

14. *Pericrocotus igneus*, Blyth.

15. *Gerygone pectoralis*, Davison. A new bird shot among Casuarinas at Kwala Pahang.

16. *Rhipidura javanica*, Blyth. Very common in open country.

17. *Rhipidura perlata*, S. Müll.

18. *Terpsiphone affinis*, Hay.

19. *Terpsiphone incii*, Gould.

20. *Philentoma relatum*, Temm. Kwala Tahan.

21. *Philentoma pyrrhopterum*, Temm.

22. *Siphia elegans*, Temm. Kwala Tahan.

23. *Aegithina tiphia*, Linn. Pulau Tawar.

24. *Chloropsis zosterops*, Vig. Kota Glanggi.

25. *Pinarocichla lunulata*, Davison. A new bulbul.

26. *Criniger phaeocephalus*, Hartl. Than woods.

27. *Trachycomus ochrocephalus*, G. M. "Barabara" common near Pekan.
28. *Pycnonotus analis*, Horsf. The common bulbul.
29. *Pycnonotus plumosus*, Blyth. Common.
30. *Irena cyanea*, Begbie. Kwala Tahan.
31. *Copsychus musicus*, Raffl. Common in the cultivated country.
32. *Cittocincla tricolor*, Levaill. Pulau Chengei.
33. *Orthotomus ruficeps*, Lesson. Open country.
34. *Hydrocichla ruficapilla*, Temm. Kwala Tahan in streams.
35. *Pomatorhinus bornëensis*, Cab. Kwala Tahan.
36. *Stachyris nigricollis*, Temm. Pahang River. Common.
37. *Turdinus abotti*, Blyth. Common.
38. *Turdinus magnirostris*, Moore. Common.
39. *Turdinus macrodactylis*, Strickl. Kwala Tahan.
40. *Drymocataphus nigricapitatus*, Eyton. Tanjong Loyang.
41. *Malacopterum magnum*, Eyton. Kwala Tahan.
42. *Malacopterum melanocephalum*, Davison.
43. *Miscornis gularis*, Raffl. Common.
44. *Miscornis erythropterum*, Blyth. River banks etc. Common.
45. *Macrornis ptilosus*, Lard & Selb. Common. Pahang river.
46. *Ptilocichla leucogastra*, Davison. River Tahan.
47. *Lanius cristatus*, Linn. The common shrike inhabits open country.
48. *Calchostetha insignis*, Lard. Open country.
49. *Aethopyga siparaja*, Raffl. Open country.
50. *Cinnyris pectoralis*, Horsf. Open country.
51. *Anthothreptes hypogrammica*, S. Müll. Kwala Berar, etc.
52. *Anthothreptes malaccensis*, Scop. Open country.
53. *Dicaeum cruentatum*, Linn. Open country common.
54. *Dicaeum chrysorrhoeum*, Temm. Open country common.
55. *Hirundo javanica*, Sparrm.. Common swallow.

56. *Hirundo badia*, Cassin.
57. *Anthus rufulus*, Vieill. Meadow pipit. Open country.
58. *Passer montanus*, Linn. Common sparrow.
59. *Acridotheres torquatus*, Davison. Pulau Tawar.
60. *Mainatus javanensis*, Osb. Pulau Tawar. The "Tiong."
61. *Calornis chalybea*, Horsf. The green starling, common in open country near Pekan.
62. *Munia maja*, Linn. Common. A nest was taken at Pekan.
63. *Munia atricapilla*, Vieill. Common.
64. *Uroloncha acuticauda*, Hodgs. Common.
65. *Ploceus baya*, Blyth. The weaver bird. Nesting at Pekan and Pulau Tawar.
66. *Pitta cucullata*, Hartt. Bentong.
67. *Pitta cyanoptera*, Temm. Bentong.
68. *Pitta megarhyncha*, Schl. Kwala Pahang.
69. *Pitta boschi*, Müll. Caves Kota Glanggi.
70. *Calyptomena viridis*, Raffl. Very common.
71. *Eurylaemus javanicus*, Horsf.
72. *Eurylaemus ochromelas*, Raffl. Black and yellow broadbill. Common on the Tembeling river.
73. *Corydon sumatranus*, Raffl. Malay "Tiong batu."
74. *Cymborhynchus macrorhynchus*, G. M. Very common all up the river.
75. *Chaetura gigantea*, Temm. Open country near Pekan.
76. *Macropteryx comatus*, Temm. Tahan river.
77. *Caprimulgus macrurus*, Horsf. Open country.
78. *Lyncornis temminckii*, Gould.
79. *Eurystomus orientalis*, Linn. The Eastern roller.
80. *Merops sumatranus*, Raffl.
81. *Merops philippinus*, Linn. Very common near Pekan.
82. *Nyctiornis amicta*, Temm. The forest bee eater.
83. *Pelargopsis malaccensis*, Sharpe. Common all up the Pahang river.
84. *Alcedo ispida*, Linn. Common small king-fisher.
85. *Alcedo meninting*, Horsf. Pulau Chengei, &c.
86. *Halcyon coromandus*, Lath. Kuala Pahang.
87. *Halcyon smyrnensis*, Linn. Open country along

Pahang river.

88. *Halcyon pileatus*, Bodd.
89. *Halcyon humii*, Sharpe. Very common at Kuala Pahang.
90. *Buceros rhinoceros.* Linn. Common up the river.
91. *Anthracoceros convexus.* Temm. Very common along lower reaches of Pahang river.
92. *Rhinoplax vigil.* Forst. River Tembeling.
93. *Harpactes kasumba.* Raffl. The common Trogon Kuala Tahan &c.
94. *Harpactes diardi.* Temm. do. do
95. *Harpactes duvaucelli.* Temm. do. do.
†96. *Gecinus puniceus.* Horsf.
†97. *Chrysophlegma malaccense*, Lath.
†98. *Chrysophlegma humii*, Hargitt.
†99. *Iyungipicus auritus*, Eyt.
†100. *Lepocistes porphyromelas*, Boie.
†101. *Miglyptes grammithorax*, Mach.
†102. *Miglyptes tukki*, Less.
†103. *Micropternus brachyurus*, Vieill.
†104. *Tiga javanensis*, Ljung.
†105. *Chrysocolaptes rallidus*, Temm. Kuala Tembeling.
†106. *Humilophus pulverulentus*, Temm.
†107. *Thriponax javensis*, Horsf.
†108. *Calorhamphus hayi*, Gray. Very common in open country.
†109. *Cyanops henrici*, Temm. Temm. jungles.
110. *Cacomantis passerinus*, Vahl. Open country.
111. *Centropus bengalensis*, G. M. Open country secondary jungle.
112. *Rhinortha chlorophoea*, Raffl. The cat bird, common everywhere.
113. *Psittinus incertus*, Salv. Small parokeet.
113*a*. *Pava muticus.* Common peacock.
113*b*. *Gallus ferrugineus.* Common. Kuala Pahang.
114. *Osmotreron olax*, Temm.
115. *Osmotreron vernans*, Linn.
116. *Ptilonopus jambu*, G. M.

117. *Chalcophaps indica*, Linn.
118. *Lobivanellus atronuchalis*, Blyth.
119. *Charadrius fulvus*, G. M.
120. *Dendrocygna javanica*, Horsf.
121*a*. *Aegialites godefroyi*. Kuala Pahang.
121*b*. *Gallinago sthenura*, Pin tailed snipe. Pulau Tawar.
122. *Butorides javanica*, Horsf.
123. *Herodias garzetta*, The common Egret. Pekan.
124. *Leptoptilus javanicus*, Adjutant or "Burong Babi" common all along river.

A Catalogue of the Flowering Plants and Ferns Found Growing Wild in the Island of Penang.

COMPILED BY

C. CURTIS, F.L.S.

Assistant Superintendent of Forests, Penang.

THE Island of Penang, situated in Lat. 5° 24′ North, and Long. 100° 20′ East, has an area of about 106 square miles.

The greater portion is hilly, the highest point being West Hill, about the centre of the Island, which is 2,750 feet above sea level. Government Hill, on which many of the plants recorded have been collected, is about 250 feet lower. From an altitude of about 1,000 feet, and in some places much lower, these hills are covered with a varied and luxuriant vegetation, conspicuous among the larger trees being Dipterocarps, *Agathis loranthifolius*, *Dacrydium elatum*, Oaks, Eugenias, &c. Underneath these is found a heterogeneous mass consisting of seedlings of the larger trees intermixed with a variety of shrubs and smaller trees, all struggling for supremacy.

Deep ravines are numerous, the bottoms of which are a mass of more or less rounded granite boulders piled one on top of the other in great confusion, so that to cross from one side to the other is often a matter of difficulty. In many of these ravines, up to 1,500-2,000 feet, there are small but permanent streams of water that can only be detected by the sound of their rippling several feet below the surface, where they have found a passage among the boulders.

It is in such places, where the direct rays of the sun never penetrate, growing on these boulders, that the great wealth of Ferns, Aroids, Medinillas, Rhododendron, *Cypripedium barbatum*, Didymocarps, Sonerilas, small Orchids and such like things are most abundant.

The soil of all the hills is very similar, being of a reddish or yellow colour, and composed mainly of partially decomposed granite. In the lower lands where the soil is of a different nature, and where one might naturally expect to find a somewhat different flora, forests have long disappeared, and with them probably many plants that were once common. When forests have once been felled and burnt off there is an end to the most interesting vegetation, at least for a long period. Even though no cultivation be attempted most of the trees, shrubs, etc., that spring up on the cleared land are different from the original ones, and of as little value commercially as they are botanically uninteresting. Among the first to assume possession, often to the exclusion of every other plant, is the "lalang" (*Imperata arundinacea*), and in places where this is absent "resam" (*Gleichenia sps.*). Of woody plants, *Rhodomyrtus tomentosa*, *Eurya acuminata*, *Trema amboinense*, and *Adinandra dumosa* are among the first and most numerous in a new clearing. The present site of the Botanic Garden had at some time in the earlier days of the Settlement of Penang been planted with cloves and nutmegs, but at the time the formation of a garden was commenced these trees had long been dead and the land was covered with secondary jungle, in many places as dense as that of the surrounding hills that apparently have never been cleared. Notwithstanding the fact that these hills rise abruptly on three sides and are covered to the summit with large Dipterocarps, Sterculias, Eugenias, Swintonia, etc., so that in a good seed-bearing season thousands of seeds must be washed down into the valley by the heavy rains, there was scarcely any trace of these re-occupying their original position on the land that had been cultivated.

What actually occupied the land was thousands of *Euyra* *acuminata*, *Rhodomyrtus tomentosa*, *Melastoma malabathrica;* and in lesser numbers *Glochidium obscurum*, *Crypteronia pubescens*, *Morinda tinctoria*, and a few others. Where there were no trees the "lalang" had taken absolute possession.

The mean temperature of the Island is a little above 80 F., with a range of 14°-15°, and the average rainfall for the past five years 120 inches, spread more or less over the whole year, though most falls during the latter half.

There is no well-defined flowering season; some things can be collected at almost any time, while others appear to flower only at intervals of several years. During the past seven years there has been but one really good flowering season, which I attribute to the unusually long drought of the preceding period.

Several large collections of plants have, at various times, been made in Penang, the most important being those of WALLICH, MAINGAY, PORTER and PHILLIPS. A great many of the plants found by these, and other of the earlier collectors, I have been able to identify and hope yet to add largely to the number, but owing to the increased area under cultivation since their time, and the complete change that follows clearing, as already pointed out, it is probable that some of the plants recorded by them will not be again collected on the Island.

So far as I am aware no separate catalogue of plants collected in Penang has yet been published, and thus it is hoped that the present, though incomplete, may be of use to those interested in the botany and forestry of the region until material is available for a better.

Not having access to many books in which scattered records of Penang plants occur, I have included (in cases where I have not myself collected a specimen or seen the plant growing wild) only those for which Penang is given as a locality in the Flora of British India, Annals of the Royal Botanic Gardens Calcutta, and Materials for a Flora of the Malayan Peninsula, so far as these works are published; HOOKER'S Synopsis Filicum, and BEDDOME'S Ferns of British India. No doubt many plants, whose distribution is so general throughout the Malayan

Islands and the Peninsula that their occurrence in Penang is not mentioned in either of the above works, have been collected here, but if I have not seen them they are omitted from this list.

The earlier orders to the end of Tiliaceæ, and also Myristicaceæ and Cupuliferæ, have been carefully compared and determined by Dr. KING in the course of preparing the Annals and Materials, so that the determination in these orders may be accepted with greater confidence than others on which the same critical examination has not been brought to bear.

The most incomplete orders are those not yet taken up in the Flora of British India, as I have no means of ascertaining what species were collected by the earlier collectors, or of identifying those collected by myself. Mr. RIDLEY'S intimate knowledge of Orchids and Grasses has enabled me to identify nearly all the species collected.

Numbers bracketed thus (C. 241-259) are those under which specimens of the plant have been distributed, and the letter (C.) in brackets implies that though not distributed I have collected it, or it is well known to me in a living state. Malay names, where given, are printed in inverted commas, but these have been sparingly used, for, except in the case of plants used either as food or medicine, native names in Penang are unreliable. Even in the case of timbers in general use the same name is often applied to several species, and sometimes to trees belonging to different orders, so that their practical value as an aid to identification is not great. I am aware that in the other Settlement where there is still a considerable Malay agricultural population this does not apply with the same force.

I cannot sufficiently express my obligation to Dr. KING the Kew authorities, Mr. H. N. RIDLEY and Bishop HOSE for assistance in determining my collections, and I take this opportunity of requesting those who have received sets to kindly point out any errors of determination that may come under their notice, and to supply the names when wanting.

Penang, 12th November, 1892.

RANUNCULACEÆ.

Clematis smilacifolia, Wall.; strong growing climber. Penara Bukit, rare. (C. 1048).

Naravelia laurifolia, Wall.; long slender climber. Waterfall, rare. (C. 1709).

DILLENIACEÆ.

Delima sarmentosa, L.; woody climber with white sweet-scented flowers. Not uncommon. (C. 294).

Tetracera assa, DC.; climbing shrub; the commonest plant of this order. (C. 69.)

Tetracera macrophylla, Wall.; large woody climber. Government Hill. (C. 3008).

Tetracera, sp.; a larger and more robust plant than the preceding. Government Hill. (C. 1495).

Acrotrema costatum, Jack.; stemless, flower yellow; leaves silvery grey. Waterfall, common. (C. 456).

Wormia oblonga, Wall.; medium sized tree. Telok Bahang, not common. (C. 257).

Wormia Kunstlerii, King; tree 60-70 feet; fruit about 1 in. through, flowers not seen. Nalm Pass. (C. 2465).

Dillenia indica, L.; "Simpoh;" tree 40-60 feet; fl. white, 5-6 in. across. Not common. (C.).

Dillenia ovata, Wall.; small tree 20-30 feet; fl. yellow, 4 in. across, fruit globular 3-3½ in. through. Waterfall (C. 228).

Dillenia grandifolia, Wall.; I have not seen in flower, but have leaf specimens that agree with the description in Fl. B I. (C.).

MAGNOLIACEÆ.

Magnolia Maingayi, King; tree 30-40 feet; bark grey, fl. white, fragrant. Government Hill at from 2,000-2,500 feet. (C. 292).

Michelia champaca, L.; largely cultivated and often found on abandoned land, but not truly wild in Penang. (C.).

Talauma mutabilis, Bl.; small tree, fl. white, sweet-scented. Not uncommon. (C. 1022).

Talauma lanigera, Hook. fil.; Small tree. Government Hill, rare. (C. 3008).

Kadsura scandens, Bl.; woody climber, fl. almost white, about ½ in. in diameter. Penara Bukit. (C. 1529).

Kadsura lanceolata, King; slender woody climber. Not uncommon. (C. 2821).

Kadsura cauliflora, Bl.; stem stouter and leaves larger than in the preceding; carpel red, the size of a pea. (C. 2440).

ANONACEÆ.

Stelechocarpus, sp.; a tree 30-40 feet high, fl. greenish, carpel globular, ¾ in. Waterfall. (C. 2277).

Sageraea elliptica, Hook. fil.; a large tree. Not seen.

Cyathostemma viridiflorum, Griff. Not seen.

Cyathostemma Hookeri, King; long woody climber, fl. small, yellow. Waterfall and Government Hill. (C. 1213).

Uvaria dulcis, Dunal; woody climber, Government Hill and Muka Head, not common. (C. 729-1414).

Uvaria Labbiana, Hk. fil.; large climber; not common; at low elevation. (C. 841-1234).

Uvaria excelsa, Wall.; large woody climber. Abundant. (C. 50).

Uvaria macrophylla, Roxb.; a large scandent or climbing shrub. This and the preceding are the two most common Uvarias in Penang. (C. 263, 842, 1312).

Uvaria purpurea, Bl.; large woody climber; found at low elevations only. (C. 234).

Uvaria hirsuta, Jack; long climber, petals red. Waterfall and Western Hill. (C. 1212).

Uvaria Curtisii, King; a long climber, fl. yellowish. Government Hill 2,000 feet, rare. (C. 1415).

Uvaria pauciovulata, Hk. fil. Government Hill. (C. 825).

Uvaria micrantha, Hk. fil. Not identified.

Uvaria sub-repanda, Wall.; scandent shrub. (C. 1408.)

(*Ellipeia nervosa*, Hk. fil.; for which Penang is given as a locality in the Materials for a Flora of the Malayan Peninsula was collected in Perak.)

Cyathocalyx Maingayi, Hk. fil.; a large tree, flowers greenish yellow, Telok Bahang. (C. 1035.)

Artobotrys suaveolens, Bl.; long climber. Common (C. 26-2234).

Drepananthus pruniferus, Maingay; small tree, 25-40 feet high; branches long, drooping. (C. 1417).

Canangium odoratum, Baill. Not truly wild in Penang. (C).

Unona Dunalii, Wall.; tree Muka Head. (C. 727).

Unona desmos, Dunal; a climber. West Hill and Batu Feringgi. (C. 807-1413).

Unona stenopetala, Hook. fil. King's collector, Scortechini.

Polyalthia clavigera, King; a tree 30-40 feet high; carpels yellow. Penara Bukit. (C. 2444).

Polyalthia macrophylla, Hook. fil.; a tree 30-40 feet high. Pulau Betong. (C. 2140).

Polyalthia cinnamomea, Hook. fil.; a tree 60 feet high; flowers dull red, principally on leafless branches. Not uncommon in the south of the island. (C. 2470).

Polyalthia oblonga, King; small tree. Common. (C. 1409-1277-1281).

Anaxagorea Scortechinii, King; a tree 30-40 feet high Government Hill. (C. 1054)

Goniothalamus Kunstleri, King; an erect growing shrub 6-8 feet high. West Hill. (C 1540).

Var. *macrantha*. Waterfall. (C. 1596).

Goniothalamus giganteus, Hook. fil.; a tree 40-50 feet, petals golden yellow. Waterfall. (C. 2162).

Goniothalamus macrophyllus, Hook. fil.; a shrub 6-8 feet high, scarcely at all branched. (C. 1577).

Goniothalamus tapis, Miq.; a large shrub. Government Hill 2,000-2,500 feet. (C. 302).

Mitrephora macrophylla, Oliver; a large shrub. (C. 813-1279).

Mitrephora Maingayi, Hook. fil.; a small tree. Not uncommon. (C. 157-1553).

Popowia ramosissima, Hook. fil.; a small tree. Collected Pulau Betong. Not distributed. (C.).

Popowia tomentosa, Maingay; a small tree. Government Hill, 2,000-2,500 feet. (C. 648).

Popowia nervifolia, Maingay; a small tree. (C. 893).

Oxymitra calycina, King; a woody climber. Government Hill 2,000 feet, rare. (C. 767).

Oxymitra glauca, Hook. fil. Not identified.

Melodorum manubriatum, Hook. fil. Collected by Maingay.

Melodorum latifolium, Hook. fil.; a large climber reaching to the top of tall trees. Common. (C. 1411-1196).

Melodorum lanuginosum, Hook. fil.; large woody climber. Government Hill 1,000-2,000 (C. 797-1195-1383).

Melodorum Maingayi, Hook. fil.; large climber. (C. 1046).

Melodorum prismaticum, Hook. fil.; Government Hill. (C. 730).

Melodorum rubiginosum var. *oblongum*, King. Waterfall (C. 143).

Melodorum elegans, Hook. fil.; Not seen. Wallich 6474*a*.

Melodorum pisocarpum, Hook. fil. Not seen.

Xylopia Curtisii, King; a tree 30 feet high. (C. 1569).

Xylopia elliptica, Maingay; a tree 25-30 feet high; petals yellowish white. Sungei Ujong. (C. 2482).

Xylopia stenopetala, Oliver; a tree 59-60 feet high. Government Hill 690 feet. (C. 857-880).

Phœanthus nutans, Hook. fil.; a small tree. Government Hill 2,000 feet. (C. 1416).

Phœanthus lucidus, Oliver; a small tree. Waterfall. Not uncommon. (C. 839-1407).

Alphonsea Curtisii, King; a scandent shrub. Muka Head. (C. 1410).

Mezzettia Curtisii, King; a tree 30-40 feet high; carpels about 2 in. in diam, (2266).

Undetermined sps. of Anonaceæ in Herb. Penang. (C. 2744,2745, 2775, 2768).

MENISPERMACEÆ.

Tinospora crispa Miers; climbing shrub. Waterfall. Not common. (C. 1231).

Tinomiscium petiolare, Miers; climber. Penara Bukit and Pulau Betong. (C. 208).

Fibraurea chloroleuca, Miers: large woody climber. Waterfall and West Hill. (C. 208).

Coscinium Blumeanum, Miers; large clmber; ripe drupes round, tomentose, ¾ in. (C. 8).

Limacia triandra, Miers; climbing shrub. Tanjong Bunga, near the beach. (C. 447).

Limacia oblonga, Miers; a climber. Government Hill. (C. 671).

Limacia velutina, Miers; a woody climber. At from 1,000-2,000 feet elevation. (C. 2296).

Hyserpa triflora, Miers, "Kelintek Nyamok." A slender climbing shrub. (C. 949-1558).

Pericampylus incanus, Miers; a slender climber. The most common plant of this order in Penang. (C. 122).

Stephania hernandifolia, Walp.; slender climber. Penara Bukit, 1,000 feet. (C. 1260).

NYMPHEACEÆ.

Nymphea stellata, Willd. "Klipoh." Common in ditches and paddy fields. (C. 518).

CRUCIFERÆ.

Cardamine hirsuta, L.; small annual herb found sparingly on the top of Government Hill. (C. 2156).

CAPPARIDEÆ.

Cleome viscosa, L.; annual herb 1-2 feet. Coast. (C. 1859).

Capparis Scortechinii, King; scandent shrub. I know of but one plant at Batu Feringgi. (C. 239).

Capparis micrantha, DC.; shrubby. Not common. (C. 1762).

VIOLACEÆ.

Viola serpens, Wall.; occurs sparingly on the top of Government Hill. (C.)

Alsodeia Wallichiana, Hk. fil.; erect shrub 3-5 feet; seen only at the Waterfall. (C. 1532-1899).

Alsodeia lanceolata, Wall.; small shrub, the only plant of the genus that is at all common. (C. 94-179).

Alsodeia lanceolata, var. *foliis latioribus* is a much larger plant than the type. (C. 75).

Alsodeia Kunstleriana, King; shrub about the same size as *A. Wallichianus*. Waterfall, Not common. (C. 1898).

Alsodeia echinocarpa, Korth, is mentioned in Dr. King's

Materials for the Flora of Malayan Peninsula as occurring in Penang but I have not seen it.

BIXINEÆ

Scolopia rhinanthera, Clos.; small tree. Government Hill. Not common. (C. 991).

Scolopia Roxburghii, Clos.; tree 20-30 feet. Government Hill. (C. 778).

Scolopia crenata, Clos.; large shrub, sometimes small tree. Not uncommon near the coast. (C. 706).

Flacourtia inermis, Rox., is said to have been collected in Penang by Jack. It is known to me as a cultivated tree only. (C.).

Flacourtia rukam, Zoll. & Moritz; a tree attaining a height of about 30 feet. Not uncommon. (C. 1566).

Flacourtia cataphracta, Rox., was collected on Government Hill by Kunstler. Not seen.

Hydnocarpus Curtisii, King; small tree. Batu Feringgi and Waterfall. (C. 800-1535).

Hydnocarpus nana, King; small tree. Telok Kumbar, rare. (C. 854).

Ryparosa Scortechinii, King; medium-sized tree, flowers from the stem. (C. 1741).

PITTOSPOREÆ.

Pittosporum ferrugineum, Ait., "Chabe hantu;" small tree, common about Batu Feringgi. (C. 453-1533).

POLYGALEÆ.

Polygala venenosa, Hassk.; shrub 2-3 feet. Not uncommon in damp shady places at about 2,000 feet. (C. 291).

Polygala brachystachya, Bl. Flowers yellow in open grassy places. (C.).

Trigoniastrum hypoleucum, Miq.; tree 30-40 feet with long slender branches. Government Hill. (C. 387).

Salomonia oblongifolia, DC.; dwarf herb, common in open grassy places. (C.).

Salomonia cantoniensis, Lour. Waterfall. (C. 1599).

Xanthophyllum affine, Korth.; tree not large; flowers open white, soon change to yellow. (C. 1188-2263).

Xanthophyllum Maingayii, Hook. fil.; small tree; flowers white. Government Hill, rare. (C. 1439).

Xanthophyllum eurhynchum, Miq.; tree. Telok Bahang near the coast. (C. 1552).

Xanthophyllum Wrayii, King; small tree. Balik Pulau. (C. 677).

Xanthophyllum pulchrum, King. Penara Bukit, rare. (C. 1167).

Xanthophyllum Kunstleri, King; medium-sized leafy tree 40 feet high. Government Hill. (C. 1590).

Xanthophyllum Curtisii, King; small tree; flowers yellowish white. Moniot's Road. (C. 1591).

Xanthophyllum Scortechinii, King; tree 25-30 feet, flowers pink; fruit globose 2½ in. Government Hill. (C. 2407).

Xanthophyllum, sps. undetermined. (C. 474 and 1486).

PORTULACEÆ.

Portulaca oleracea, L.; annual herb, sometimes used as a salad. Common. (C. 1650-1875).

Portulaca quadrifida, L.; small succulent herb. Collected in the Fort. (C. 2148).

HYPERICINEÆ.

Hypericum japonicum, Thunb.; dwarf herb with yellow flowers. Rice fields, south of the Island. Common. (C. 1946).

Cratoxylon arborescens, Bl. var. *Miquelii;* large tree, 60 ft. Government Hill 1,500-2,000 feet. Common. (C. 285).

Cratoxylon polyanthum, Korth. "Drum"; medium-sized tree. Not common. (C. 1168).

Cratoxylon polyanthum var. ligustrinum, Bl. (C. 824).

Cratoxylon formosum, Bth. & Hk.; tree about 30 feet; the most common of the genus. (C. 172-665).

Cratoxylon Maingayii, Dyer, is probably the plant in Herb. Penang (C. 2484).

GUTTIFERÆ.

Garcinia merguensis, Hook. fil.; small tree. Telok Bahang. Not uncommon. (C. 900-2408).

Garcinia eugeniæfolia, Wall.; small tree. Government Hill 1,500 feet. (C. 669).

Garcinia Scortechinii, King; tree 50-40 feet. Telok Bahang. Not common. (C. 1249).

Garcinia Hombroniana, Pierre; fruit much like a mangosteen but smaller. A common tree. (C. 690-2453).

Garcinia cornea, L. (C. 690 perhaps belongs to this species according to Dr. King).

Garcinia fascicularis, Wall.; small tree. Waterfall. (C. 840-1421).

Garcinia Penangiana, Pierre; small tree. Waterfall and Government Hill up to 1000 feet. (C. 1430-1549-1514).

Garcinia bancana, Miq.; small tree, seen only near the Coast. (C. 240).

Garcinia atro-viridis, Griff. "Asam Gelugur"; tall handsome tree; fruit yellow grooved, larger than mangosteen. Often cultivated. (C. 855).

Garcinia Griffithii, T. and ; small straight tree. (C. 1609).

Garcinia nigro-lineata, Pl.; tree 30-40 feet, branches slender; fruit 1-1½ inch yellow. (C. 1420-2478).

Garcinia Xanthochymus, Hook. fil. Not seen.

Garcinia, sps. undetermined and apparently distinct from any of the above. (C. 2293) (899-1424) 2412-1080 (691-1423) (2246) (1550).

Calophyllum spectabile, Willd. All the sps. of Calophyllum produce valuable timber known locally as "Bintangor." (C. 1153-1154).

Calophyllum canum, Hook. fil.; medium-sized tree. Government Hill. (C 1543).

Calophyllum pulcherrimum, Wall.; tall straight tree. (C. 418).

Calophyllum Kunstlerii, King; medium-sized tree. Common along the coast. (C. 1425).

Calophyllum Curtisii, King; 40-50 feet; fruit the size of a pea. Government Hill. Rare. (C. 523).

Calophyllum molle, King; small tree. Government Hill 1,000 feet. Not common. (C. 1426).

Calophyllum inophyllum, L. "Penaga"; medium-sized tree; occurs sparingly along the sea shore. (C. 133).

Calophyllum sp. near *floribundum*; medium-sized tree. Government Hill 1,000 feet. (C. 830).

Kayea racemosa, Pl. and Trian.; tree 40-50 feet Government Hill, rare. (C. 1441).

Kayea Kunstlerii, King; small much branched tree Waterfall, etc., common. (C. 805, 1418, 1419).

Kayea and *nervosa*, T. And.; West Hill. (C. 748).

Mesua ferrea, L. "Matopus"; large tree, valuable timber. Muka Head and Government Hill. (C. 420).

TERNSTRŒMIACEÆ.

Ternstrœmia penangiana, Choisy; tree 30-50 feet; flowers yellowish white. Government Hill. (C. 905).

Ternstrœmia coriacea, Scheff.; medium-sized tree; bark grey, smooth. Government Hill. (C. 1055).

Adinandra dumosa, Jack. "Kayu Gula"; tree 20-30 feet, Common on abandoned land in secondary jungle. (C. 35,1725).

Adinandra acuminata, Korth.; small tree, does not occur below 1,006 feet. (C. 482).

Adinandra Miquelii, King. (C. 1612).

Adinandra integerrima, T. And. Not identified. Wallich Nos, 3663 and 7070.

Adinandra maculosa, T. And. Not identified.

Adinandra Hulletti, King. (C. 275, in part).

Adinandra villosa, Choisy; small tree 25 feet. Government Hill 2,000 feet, rare. (C. 2241).

Eurya acuminata, DC.; small tree 25-30 feet. Very common in places. (C.299).

Eurya japonica var nitida, Penang, Lobb in fil. Brit. Ind. is probably an error.

Saurauja tristyla, DC.; small tree. Government Hill, damp shady ravines. (C. 786).

Schima Noronhæ, Reinw. "Medang Bequoi"; medium sized tree; wood soft. Moderately common all over the island. (C. 161, 166).

Pyrenaria acuminata, Planch. is said to occur in Penang. Not seen.

Gordonia excelsa, Bl. ; tall tree ; flowers large yellow. Government Hill, rare. (C. 834).

Gordonia sp. ; tree 20-30 feet. Top of Government Hill. (C. 2281).

Gordonia anomala, Spring, is a doubtful Penang plant stated to have been sent to Calcutta from Penang. It is a native of China.

Archytæa Vahlii, Choisy ; shrub 6-10 feet ; flowers pink. Batu Feringgi, not seen elsewhere. (C. 1069).

DIPTEROCARPEÆ.

Dipterocarpus grandiflorus, Blanco ; "Kayu minyak" ; a large tree which yields an useful oil. (C. 424).

Dipterocarpus cornutus, Dyer ; large tree 70-80 feet high. Waterfall, not common. (C. 1402).

Dipterocarpus fagineus, Vesque ; "Kruen" ; a large tall tree yields oil ; moderately common on Government Hill up to 1,000 feet. (C. 1401).

Dipterocarpus, sp. ; much resembling the preceding and scarcely distinguishable when not in fruit. Government Hill. (C. 1560).

Dipterocarpus Kerrii, King ; a large tall tree closely resembling the species named after Dr. KERR, but in the absence of flowers there is some doubt. Waterfall, not common. (C. 1653). Typical *D. Kerrii* was collected on Gunong Tunggal in the Dindings and the local name is "Kruen chaia." (C. 1561).

Dipterocarpus Skinnerii, King ; an exceedingly rare species named in honour of the Resident Councillor of Penang. A tree about 70 feet high, bark rough, warty. West Hill 1,500 feet, only one tree seen. (C. 1403).

Ancistrocladus extensus, Wall. var. *pinangianus ;* a large woody climber, abundant in places. (C. 774).

Anisoptera Curtisii, Dyer. "Rengkon" ; large tree, pretty common on Government Hill up to 2,000 feet. (C. 428).

Vatica pallida, Dyer ; small tree, branches slender, drooping. Common on the lower slopes of the hills and one of the few Dipterocarps that flowers annually. (C. 117).

Vatica Curtisii, King: medium-sized tree, fruit in young state brick red. Waterfall, not common. (C. 1579).

Vatica nitens, King; middling-sized tree, not common. Telok Bahang. (C. 1404).

Vatica Wallichii, Dyer, "Ressak" small tree, bark smooth grey, Abundant. (C. 1218 1161 1391).

Shorea glauca, King, "Damar laut daun besar"; large tree wood hard and durable, one of the best forms of timber that are locally known as "Damar laut." (C. 372).

Shorea sericea, Dyer, "Seraya"; large tree, wood easily worked and used for a variety of purposes. Not common in Penang. (C. 431).

Shorea Curtisii, Dyer; "Meranti tai"; tree 60-80 feet high, leaves silvery grey, wood soft but much used for indoor work. More or less common all over the island. (C. 427-1394-1395).

Shorea ciliata, King; medium-sized tree, wood hard, durable. Government Hill, rare. (C. 1578).

Shorea utilis, King, "Damar laut No. satu"; large tree, wood hard and close grained. Undoubtedly the best timber in the island. Waterfall and Muka Head, too much in demand to be common. (C. 423).

Shorea puaciflora, King; medium-sized tree. Government Hill. (C. 1527).

Shorea parvifolia, Dyer, "Meranti daun kechil"; tall straight tree, bark rough deeply grooved. Abundant. (C. 201).

Shorea, sp. near *parvifolia* but with smaller fruit and probably a distinct species. West Hill 2,000 feet. (C 437).

Shorea costata, King, "Damar laut"; large tree. Government Hill, rare. (199).

Shorea bracteata, Dyer, "Semah" tall straight tree. Waterfall, not common. (C. 1405).

Shorea macroptera, Dyer, tree 50-60 feet high. Government Hill, (C. 1392).

Hopea intermedia, King. "Jankang"; medium-sized tree, not uncommon. (C. 425-1397).

Hopea micrantha, Hook fil.; medium-sized rather tall tree much like the preceding. Government Hill. (C. 266).

Hopea Curtissii, King ; large straight tree 60-80 feet high ; immature fruit greenish yellow. Waterfall. (C. 1562).

Balanocarpus pinangianus, King. "Damar itam" ; large tree. Government Hill, &c., common. (C. 1, 429, 1393).

Balanocarpus Curtisii, King ; small tree 15-30 feet high, bark smooth, polished. Waterfall, abundant in two places. (C. 1406).

MALVACEÆ.

Sida carpinifolia, L. "Katombe." A shrub 1-2 feet high flowers yellow. Common. (C. 946, 1894).

Sida rhombæfolia, L. Not uncommon. (C.).

Urena lobata, L. "Pulut"; very common. (C. 3).

Abutilon indicum, G. Don ; dwarf shrub. Open places near the coast. (C. 127).

Hibiscus surattensis, L. ; climber. Not common. (C. 70).

Hibiscus abelmoschus, L. ; undershrub with large yellow conspicuous flowers. Open places not common. (C. 1925).

Hibiscus macropyhllus, Rox. Recorded from Penang with no collector's name in Fl. Brit. Ind. probably an error. Not collected by me.

Hibiscus tiliaceus, L. ; littoral tree, 30-40 feet high. Common. (C. 274).

Thespesia populnea, Corr. "Baru" ; a tree 20-30 feet. Not common. (C. 1715).

Eriodendron anfractuosum, D.C. A tall tree found in many native gardens, but not truly wild in Penang. (C.)

Durio zibethinus, L. "Durian" ; cultivated, and often found in a half wild state on abandoned land. (C.).

Durio testudinarum, var. penangianus, Beccari ; a tall straight tree ; flowers and fruit from the stem, generally within a few inches of the ground. Fruit round, the size of a large orange. West Hill 2,500 feet. (C. 293).

Boschia Griffithii, Mast. ; a tree 30-40 feet ; fruit bright red. Telok Bahang. (C. 381).

Neesia synandra, Mast. Penang, Maingay. Not since collected here.

STERCULIACEÆ.

Stercuia parvifolia, Wall,; small tree 15-20 feet. Government Hill. (C. 526).

Sterculia lævis, Wall.; small tree. Government Hill. (C. 1624).

Sterculia rubiginosa, Vent.; tree 15-20 feet. Penara Bukit. Not common. (C. 1195-2471).

Sterculia ensifolia, Mast.; shrub 6-10 feet flowers dull red. Waterfall. (C. 272, 1428, 2299).

Sterculia parviflora, Roxb.; medium-sized tree 20-30 feet, conspicuous when in fruit. Not common. (C. 770-1429).

Sterculia colorata, Roxb.; small tree. Government Hill, rare. (C. 144).

Sterculia hyposticta, Miq.; large shrub. Government Hill, (C.)

Sterculia macrophylla, Vent.; tree 30-40 feet. Waterfall, rare. (C. 3008).

Sterculia, sp. large tree. Waterfall. (C. 2762).

Sterculia campanuata, Wall. large tree, deciduous; fruit white. Bukit Pulai. (C.2783).

Tarrietia perakensis, King; tree 40-60 feet high. Government Hill 2,400 feet. (C. 2229).

Tarrietia Curtisii, King; leafy spreading tree 30-40 feet; leaves digitate; samara almost black 1,000-2,000 feet. (C. 1427).

Heriteria littoralis, Dryand, "Dungun"; medium sized tree. Tidal swamps, common. (C. 517.)

Helicteres isora, L.; small tree. Government Hill. (C. 1012).

Helicteres hirsuta, Lour. *var. oblonga.* Wallich No. 1183. George Porter. (C).

Pterspermum Jackanum, Wall.; tall straight tree. Waterfall, not uncommon, (C. 783).

Pterospermum Blumeanum, Korth.; small tree. Balik Pulau. (C. 2772).

Melocha corchorifola, L.; common undershrub. (C. 413).

Buettneria Jackiana, Wall.; climbing shrub. (C. 86).

Buettneria Curtisii, Oliv.; climbing shrub, flowers white, Batu Feringgi and Telok Bahang. (C. 817-1166).

Commersonia platyphylla, And.; tree 30-40 feet; fl. white. Waterfall, not common. (C. 776).

Leptonychia glabra, Turcz.; erect shrub 6-10 feet. Common. (C. 38, 407).

TILIACEÆ.

Corchorus olitorius, L, Telok Bahang. (C. 2483).

Pentace Curtisii, King; large tree; flowers white. Waterfall. (C. 1573).

Pentace, sp.; small tree, flowers much smaller than those of *P. Curtisii*, Penara Bukit. (C. 3006).

Schoutenia accrescens, Mast.; tree 50-60 feet; calyx papery, yellowish white. Waterfall. (C. 1520).

Grewia umbellata, Rox.; scandent shrub. Common. (C. 444-714).

Grewia fibrocarpa, Mast.; small tree; drupe pyriform, yellow. Government Hill. (C. 522-1712).

Grewia globulifera, Mast.; medium-sized tree. Penara Bukit. (C. 2414).

Grewia laurifolia, Hk. fil.; small tree. Government Hill 500 feet (C. 183, 1488).

Grewia paniculata, Roxb. "Chindrie"; small tree 15-30 feet high; ripe drupes the size of a pea, black edible. (C. 108).

Triumfetta rhomboidea, Jacq.; undershrub 2-3 feet high Coast. (C. 484, 2141).

Elæocarpus Ganitrus, Roxb.; tree 30-40 feet; Penara Bukit, not common. (C. 775).

Elæocarpus parvifolius, Wall.; tree 25-30 feet not uncommon at 2,000-2,500 feet on Government Hill. (C. 310, 376).

Elæocarpus stipularis, Bl.; not seen.

Elæocarpus nitidus, Jack; small tree. Waterfall (C. 282-463).

Elæocarpus robustus, Roxb.; large tree. Telok Bahang. (C. 1,049).

Elæocarpus glabrescens, Mast.; middling sized tree. Government Hill. (C. 1,092).

Elæocarpus Griffithii, Mast.; not seen. King's collector.

Elæocarpus pedunculata, Wall.; small tree, rather common and conspicuous when in flower. (C. 256).

Elæocarpus apiculatus, Mast. Collected by Wallich No. 3969.

Elæocarpus petiolatus, Wall.; tree 25-30 feet. Waterfall, not uncommon. (C. 383, 464).

Elæocarpus Hullettii, King; small tree. (C. 1,091).

Elæocarpus Jackiana, Wall.; tree. (C. 465).

LINEÆ.

Roucheria Griffithiana, P. C.; large climbing shrub, flower yellow. (C. 165, 207).

Erythroxylon burmanicum, Griff. "Chinta mula"; tree 25-30 feet, fruit red. Waterfall (C.).

Ixonanthes icosandra, Jack. Wallich No. 4409 and 4802. (C. 717).

Ixonanthes obovata, Hook. fil.; not seen.

Ixonanthes reticulata, Jack; medium-sized tree. Government Hill. (C. 978).

MALPIGHIACEÆ.

Brachylophon Curtisii, Oliv.; erect shrub 3-5 feet, fl. yellow. Not uncommon along the Coast. (C. 231).

Hiptage madablota, Gærtn.; climbing shrub. (C. 1159-1561).

Hiptage sericea, Hk. fil. Wallich 1814. Balik Pulau. (C. 1525).

Aspidopterys concava, A. Juss.; flexuous climber. Government Hill 1,000 feet. (C. 138-798).

Aspidopterys, sp.; climber. Telok Bahang. (C. 195).

GERANIACEÆ.

Oxalis corniculata, L.; common creeping weed with yellow flowers. (C. 1836).

Oxalis Martiana, Zucc.; herb common on Government Hill. Introduced. (C. 1726).

Biophytum sensitivum, D.C.; herb 6-10 in. petals yellow; not common. (C. 2144).

Hydrocera triflora, W. & A. Paddy fields and ditches. (C. 1190).

RUTACEÆ.

Evodia Roxburghiana, Benth. Not seen. Collected by Wallich No. 8065.

Evodia robusta, Hook. fil.; large shrub. Government Hill. (C. 1485).

Evodia latiflia, D.C.; small tree. Pulau Betong. (C. 731-939).

Evodia glabra, Bl. Tree 40-50 feet. Waterfall. (C. 2428),

Tetractomia Roxburghii, Hk. F.; tree 20-30 feet; fl. white. Government Hill, not uncommon. (C. 281).

Xanthoxylum myriacanthum, Wall.; tree 25-30 feet; stem covered with prickles, rare. (C. 1,076).

Acronychia laurifolia, Bl.; tree 20-30 feet (C. 315, 374, 694).

Acronychia Porteri, Hk. fil.; a smaller and much less common tree than the preceeding. (C. 1,140, 1,162).

Glycosmis pentaphylla, Correa; small shrub, fruit round white ¼ inch in diameter, a very variable plant. (C. 89).

Glycosmis sapindoides, Lind.; small shrub. Government Hill, not uncommon. (C. 722).

Glycosmis puberula, Lind.; small tree. Government Hill, not uncommon. (C. 88, 1,223).

Micromelum pubescens, Bl. (C. 1,760).

Micromelum hirsutum, Oliv.; shrub. Ayer Hitam. (C. 1436).

Clausena excavata, Burm.; "Chenamah" small tree 10-20 feet. Common near the Coast. (C. 150).

Paramignya Griffithii, Hk. fil.; Wallich No. 6,358. Penang. G. Porter is the only authority for this, which was probably not collected here.

Paramignya monophylla, Wight.; large climbing shrub with axillary spines 1 inch long; fruit (unripe) ½-¾ inch long. Waterfall. (C. 2,207).

Atalantia Roxburghiana, Hk. fil.; "A native of Pulo Pinang" Roxburgh. A very little known plant. Not identified.

Atalantia monophylla, Corr.; small tree; not uncommon. (C. 467).

SIMARUBEÆ.

Ailantus malabarica, D. C.; tall tree, conspicuous when in young fruit. Waterfall. (C. 710).

Eurycoma longifolia, Jack.; "Tongkat barinda" small tree, common. (C. 141).

Eurycoma apiculata, A. W. B.; small tree 6-10 feet high. Waterfall. (C. 2,763).

OCHNACEÆ.

Gomphia sumatrana, Jack; "Jangot Klee," small tree; petals yellow. Not uncommon near the Court. (C. 221).

Gomphia Hookerii, Planch, larger than the preceeding; fruit bright red. Government Hill. (C. 1147, 2154).

Euthemis leucocarpa, Jack; small erect shrub; berries white (C. 1768).

Euthemis minor, Jack. Not seen.

BURSERACEÆ.

Canarium commune, L. The only tree known to me in Penang is cultivated. (C.).

Canarium nitidum, Benn.; small tree. Ayer Hitam (C. 495).

Canarium grandiflorum, Benn.; small tree. Government Hill (C. 803, 959).

Canarium, sp.; tree 30 ft.; fruit ovate, 1 in long. Muka Head and Government Hill. (C. 1432, 1433).

Canarium purpurascens, Benn.; small tree. Government Hill 1200 ft. (C. 862).

Canarium hirtellum, Benn.; small tree. Government Hill (C. 656).

Canarium laxum, Benn.; tree 30-40 ft. Government Hill (C. 1431).

Canarium, sp.; small tree. West Hill. (C. 1544).

Canarium pilosum, Benn.?; tree 30-40 ft. (2251).

Canarium rugosum, Miq.; tree 20-30 ft. Muka Head. (C. 1434).

MELIACEÆ.

Melia tomentosa, Rox. Not identified. A drawing of this at Kew and Roxburgh's description are all that are known of it. Roxburgh says "a native of Pulo Pinang where it grows into a large tree" and gives Malay name Barang bahee possible an error for Berangan babi.

Melia excelsa, Jack. Not identified, collected by Jack only here.

Dysoxylum cauliflorum, Hiern; tree 30-40 feet, flowers white, often from old wood. Government Hill. (C. 204).

Dysoxylum cuneatum. Hiern; small tree. West Hill. (C. 1045).

Dysoxylum, sp.; near *binectariferum,* tree 30-40 feet; fruit pink, 2-3 in. Government Hill. (C. 2437).

Chisocheton spicatus, Hiern; small tree. Not common. (C. 655).

Chisocheton penduliflorus, Bl.; small tree 10-15 feet with a stem 2 in. diam. Government Hill. (C. 460).

Chisocheton divergens, Bl.; small tree. Pulau Betong, rare. (C. 892).

Chisocheton glomeratus, Hiern. Collected by Porter (Wall Cat. 9040).

Chisocheton, sp.: small tree, racemes 20-24 in., pendulous; capsules 1 in., bright pink. (C. 2295).

Chisocheton princeps, Hemsley; tree 40 feet. Waterfall. (C. 1519).

Chisocheton, sp; tree 60 feet; leaves 5-6 feet; panicles as long as the leaves; fl. dirty white. Pulau Betong. (C. 2269).

Chisocheton, sp.; tree 60-70 feet; capsule 1½-1¾ in.; flesh colored, 1-2 seeded; arillus bright red. (C. 2467-2468).

Sandoricum indicum, Cov., "Sentol" large tree, cultivated; doubtful if indigenous in Penang. (C.).

Aglaia odorata, Lour. is not wild in Penang. (C.).

Aglaia tenuiecaulis, Hiern; small tree with a stem 2-3 in. diam. Government Hill. (C. 747).

Aglaia minutiflora, Bedd.; small tree; branches slender, drooping. Not uncommon. (C. 894-961).

Aglaia minutiflora, var. *Griffithii.* (C. 2003).

Aglaia palembanica, Miq. Government Hill. (C. 768).

Aglaia, sp. aff. *paniculata,* King. Small tree. (C. 895-896.

Aglaia, sp.; spreading tree 30-40 feet; fruit pyriform, silvery grey. Waterfall. (C. 2287).

Aglaia, sp. small tree; fruit ovate, brown. (2448).

Lansium domesticum, Jack. is cultivated, not wild. (C.)

Amoora rohituka, W. & A; small tree. Not common. (C. 969).

Heynea trijuga, Rox.; large tree. Penara Bukit. (C. 676).

Carapa moluccensis, Lam.; "Nireh" small tree. Common in swamps. (G. 515, 742).

Cedrela Toona, Rox.; one very large tree on the top of Government Hill, probably planted there. (C. 826).

Meliacea? small tree. Moniot's Road 2,000 feet (C. 1,690).

CHAILLETIACEÆ.

Chailletia Laurocerasus, Pl.; scandent or climbing shrub, common on Government Hill. (C. 152).

Chailletia, sp. Wall. Cat., 7443 referred to in Fl. B. Ind. I have not seen; there appears but the one species in Penang.

OLACINEÆ.

Ximenia americana, Will.; large shrub. Bata Feringgi, in damp places. (C. 1572).

Erythropalum scandens, Bl.; climbing shrub. Waterfall. (C. 2777).

Ochanostachys amentacea, Mast.; tree 50 feet, fruit globular 2-2½ inch, Government Hill. (C. 1500).

Ctenolophon grandifolius, Oliv.; large tree; flower reddish, fragrant. Muka Head, rare. (C. 721).

Strombosia javanica, Bl. not met with.

Strombosia, sp.; not the preceeding. (C. 859).

Lasianthera malaccensis, Mast.; small tree (C. 912, 957).

Gomphandra penangiana, Wall.; small tree 10-15 feet. (C. 1225).

Gomphandra, sp. shrub 2-4 feet; leaves ¼ + 4-5 inch. West Hill 2,500 feet. (C. 1,265, 737).

Pteleocarpa malaccensis, Oliv.; tall tree; flower yellow, very showy when in bloom, not uncommon. (C. 835, 1,494).

Phytocrene bracteata, Wall.; large climber. Balik Pulau. C. 1754).

Phytocrene oblonga, Wall. Not seen. Porter collected it.

Phytocrene palmata, Wall. Much more common than *Ph. bracteata*. Government Hill, &c. (C. 2327).

Iodes olbonga, Pl.; long slender flexuous climber; flower white. Waterfall. Not common. (C. 2438).

Platea latifolia, Bl.? tree 30-40 feet; fruit pear-shaped, yellow, 1 inch long. Near the waterfall. (C. 2,421).

ILICINEÆ.

Ilex macrophylla, Wall. "Medang tulok"; tree 25-30 feet. Common in all parts of the Island. (C. 290, 379, 304).

Ilex Maingayii, Hk. fil.; tree 20-25 feet. Top of Government Hill, rare. (C. 2152).

Ilex cymosa, Bl.; small tall tree. Batu Feringgi. (C. 1036).

CELASTRINEÆ.

Eunonymus javanicus, Bl.; small tree. Not uncommon. (C. 736).

Micropteris bivalvis, Wall.; small tree. Government Hill 2,000-2,500 feet. (C. 651, 652, 1025, 1727).

Micropteris, sp.; large shrub. Moniot's Road. (C. 345, 1531).

Micropteris, sp.; small tree. West Hill. (C. 968).

Lophopetalum pallidum, Laws.; medium sized tree (C. 1577).

Lophopetalum reflexum, Laws.?; tree 40-50 feet. (C. 1502).

Lophopetalum, sp.; tree. Government Hill. (C. 1501).

Lophopetalum, sp.; tree about 40 feet. Government Hill 2,000 feet. (C. 1576).

Celastrus monosperma, Wall.; large climbing shrub. Government Hill. (C. 404).

Kurrimia pulcherrima, Wall.; tree 30-40 ft. (C. 1064, 1106).

Kurrimia paniculata, Wall.; medium-sized tree 30-40 ft. Government Hill. (C. 307).

Hippocratea, sp.; small tree. West Hill, rare. (C. 175).

Salacia flavescens, Kurz; large scandent shrub. Government Hill. (C. 12).

Salacia longifolia, Hook. f.; small tree 20 ft. Government Hill, not uncommon. (C. 134, 1266).

Salacia grandiflora, Kurz; large scandent shrub. Government Hill. (C. 151).

Salacia grandiflora, variety?; a much smaller plant. (C. 249, 1737).

Salacia oblonga, Wall.? scandent shrub; fruit green, the size of a small orange. (C. 693).

Salacia Griffithii, Laws.? (C. 692).

Salacia sp.; scandent shrub. West Hill. (C. 1704).

Siphonodon celastrineus, Griff. not identified.

RHAMNEÆ.

Ventilago leiocarpa, Benth.; large climbing shrub. (C. 311, 1751).

Zizyphus Ænoplia, Mill.; large shrub. (C. 107).

Zizyphus calophylla, Wall.; large climbing shrub. Not uncommon. (C. 119).

Colubrina asiatica, Brongn. "Prea Pantie;" a common coast plant. (C. 236).

AMPELIDEÆ.

Cissus quadrangularis, L.; is cultivated, the leaves and shoots being used in curries. Not seen in a wild state. (C.)

Cissus hastata. Planch. Not seen. Porter.

Cissus glaberrima, Wall. Not common. (C. 1138).

Cissus repens, Lamk. Penara Bukit, not common. (1135.)

Cissus adnata, Roxb. Not seen.

Cissus carnosa, Lam. Common. (C. 187).

Cissus angustifolia, Wall.; fl. sweet scented, retaining their perfume long after being dried. (C. 1137).

Cissus mollissima, Wall. Muka Head. (C. 1435).

Ampelocissus thyrsiflora, Planch. (C. 3122).

Ampelocissus cinnamomea, Wall. (C. 47).

Ampelocissus compositifolia, Planch. Not identified. Penang, collected by Philips.

Ampelocissus nitida, Planch. Not identified. Wallich.

Ampelocissus polystachya, Planch. Collected by Walker.

Tetrastigma peduncularis, Wall. Not seen. Wallich No. 6024.

Tetrastigma lanceolarium, Planch. Government Hill 685.

Tetrastigma pedata, Vahl. Not identified. Lawson gives it for Penang in Flor. Brit. Ind. but with no collector's name.

Cissus, sp. ; undetermined in herb. Penang. (C. 1051, 1241, 1245).

Pterisanthes araneosa, Miq. ; leaves simple, cordatei toothed. (C. 168).

Pterisanthes, sp. ; leaves trifoliate, leaflets lanceolate, ½ in. broad. Government Hill. (C. 761).

Leea rubra, Bl. ; small erect shrub. Penara Bukit, rare. (C. 1107).

Leea sambucina, Willd. ; erect shrub 6-10 feet. Very common. (C. 96).

SAPINDACEÆ.

Cardiospermum halicacabum, L. ; annual climbing weed. Not common. (C. 349).

Erioglossum edule, Bl. ; tree 20-30 feet ; ripe fruit almost back. (C. 701).

Allophyllus Cobbe, Bl. ; small tree. Government Hill, not uncommon. (C. 340, 771, 1264).

Mischocarpus fuscescens, Bl. ; small tree. Government Hill (C. 1243).

Cupania glabrata, Kurz., tree 30-40 feet. Top of Government Hill. (C. 1041).

Cupania pleuropteris, Bl. ; small tree. (C. 646).

Var. bijuga, tree 20-40 feet (C. 789, 1158).

Cupania Lessertiana, Camb. ; tree, small on the coast, larger on the Hill. (C.227, 288).

Lepisanthes cuneata, Hiern. Not identified. Penang. Porter.

Otophora paucijuga, Hiern,; small tree. Government Hill. (C. 1164).

Xerospermum Noronhianum, Bl. ; small tree. (C. 846, 1232, 2285).

Nephelium, sp. ; large tree. Government Hill: (C. 1575).

Pometia tomentosa, Kurz. ; large spreading tree, 50 feet high. (C. 888).

Dodonæa viscosa, L. Telok Bahang. (C. 2847).

Turpinia sphærocarpa, Hassk.; tree 40-50 feet. Government Hill 2000 feet. (C. 1033, 1717).

Sapindaceæ; small tree; leaves pinnate. (C. 1600).

SABIACEÆ.

Sabia limoniacea, Wall.; climbing shrub. Sungei Penang. (C. 1221).

Meliosma lancifolia, Hook fil.; small tree. Government Hill, rare. (C. 1215).

ANACARDIACEÆ.

Mangifera quadrifida, Jack. Not identified.

Mangifera fœtida, Lour. "Bachang"; large tree common in orchards, often on abandoned land, but not truly wild. (C. 1747).

Mangifera, sp.; large tree; leaves 12-15 in. by 3-4 in.; fruit round, about 3 in. Government Hill. (C. 1598).

Mangifera, sp.; small tree; fruit not seen. (C. 1496).

Mangifera, sp.; tree 25-30 ft. fruit ovate, brown, 3 X 2½ in. long. Telok Bahang, rare. (C.)

Mangifera, sp.; tree 30-40 ft.; fruit. globular 1½-2 in. Telok Bahang. (C. 2306).

Anacardium occidentale, L. quite common in sandy places near the coast. (Introduced) (C.)

Bouea microphylla, Griff. "Rumania;" compact growing tree 20-40 ft. Waterfall and Government Hill. (C. 223).

Bouea macrophylla, Griff. is cultivated not wild in Penang. (C.)

Gluta elegans, Wall; small tree; drupes 1-1½ in. long; calyx red, petals white. Common. (C. 153, 1062).

Buchanania lucida, Bl.; tree 20-40 ft. Government Hill. (C. 319, 696).

Buchanania acuminata, Turcz.; medium sized tree. (C. 154).

Melanorrhœa Curtisii, Oliv. "Rengas;" large tree, heartwood dark red, juice poisonous. (C. 242, 433).

Swintonia Griffithii, Kurz; large tall tree. Waterfall. (C. 1579).

Swintonia spicifera, Hk. f. "Moopoo;" large tree, abundant in one or two places. (C. 371).

Odina wodier, Roxb.; I have seen but a single tree which may have been introduced. (C. 1499).

Parishia Maingayii, Hk. f.; small tree; young fruit full of white milky juice. Waterfall. (C. 2264).

Campnosperma Griffithii, March.; tree 50-60 ft.; leaves of young plants 2-3 times larger than in adult trees. Government Hill. (C. 1037).

Spondias mangifera, Willd. "Kadongdong"; often met with on abandoned land: not truly wild. (C. 752).

Dracontomelum mangiferum, Bl. Not met with. Collected by Maingay perhaps from a cultivated tree.

Anacardiaceæ, L.: tree 60 feet; bark rough, juice black, resinous. (C. 1567).

Anacardiaceæ, L.; tree 40-50 feet; drupe 1-½ in. Government Hill. (C. 2475).

CONNARACEÆ.

Agelæa vestita, Hk. F.; large scandent shrub. Telok Bahang. Not common. (C. 1556).

Rourea rugosa, Pl.; scandent shrub. Government Hill. (C. 191).

Rourea similis, Bl. Government Hill, near the chalet. (C. 473).

Roureopsis pubinervis, Hook. fil.; collected by Porter. (Wall Cat 9050). Batu Ferengy. (C. 2749).

Connarus ferrugineus, Jack. Not seen.

Connarus semidecandrus, Jack. Not seen. Philips, Wallich.

Connarus gibbosus, Wall.; tree. Telok Bahang. (C. 1151 2899).

Connarus grandis, Jack; small tree. Telok Bahang. (C. 27).

Connarus oligophyllus, Pl. Not identified. Porter.

Cnestis ramiflora, Griff.; climbing shrub. (C. 145-1157).

Ellipanthus Griffithii, Hk. F.; small tree. Government Hil near the chalet. (1014-1097).

LEGUMINOSEÆ.

Crotolaria retusa, L.; undershrub. coast. (C. 109).

Crotolaria striata, D.C. is very common. (C.)

Millettia sericea, W. & A.; large climbing shrub; pod almost black, velvety. Penara Bukit. (C. 844).

Millettia eriantha, Benth.; climbing shrub. Telok Bahang, not common. (C. 338).

Millettia atropurpurea, Benth.; tree 30-40 ft. attaining a moderate size. Not uncommon. (C. 182).

Millettia, sp.; climbing shrub. Penara Bukit. (C. 1190).

Millettia, sp.; tree. Telok Bahang. (C. 1160).

Tephrosia Hookeriana, W. and A.; undershrub 4-6 ft. (C. 1878).

Tephrosia purpurea, Pers.; Undershrub 2-4 ft. (C. 1895).

Uraria crinita, Desv.; shrubby perennial; flowers lavender. (C. 916).

Alysicarpus vaginalis, D.C. is common in open grassy places, especially at the Waterfall. (C. 1893).

Desmodium umbellatum, D.C.; shrub 6-10 ft.; corolla white. Telok Bahang on the beach. (C. 1082).

Desmodium polycarpum, D.C.; shrub 2-3 ft. Ayer Hitam. (C. 392, 459).

Desmodium triflorum, D.C. Waterfall, common. (C. 1842).

Desmodium heterophyllum, D.C. not seen.

Abrus precatorius, L.; slender climber, very common. (C. 41).

Mucuna acuminata, Graham. not seen.

Erythrina indica, Lam. "Dadap;" is commonly planted, but not truly wild in Penang. (C.)

Spatholobus Roxburghii, Benth. var. *denudatus*. Not seen.

Spatholobus gyrocarpus, Benth.; large woody climber. Government Hill. (C. 271).

Spatholobus acuminatus, Benth. Probably not a native.

Spatholobus crassifolius, Benth. "Penang 1822. Wallich." Doubtless an error. It is a native of North India.

Dioclea reflexa, Hook. fil. not seen. "Penang or Singapore" Wallich. Probably not native.

Pueraria phaseoloides, Benth. Not identified.

Pachyrhizus angulatus, Rich. is cultivated. (C.).

Cajanus indicus, Spreng. Introduced. ? (C. 118).

Flemingia congesta, Roxb. ; shrub 2-4 feet. Not uncommon. (C. 87, 1926).

Dalbergia Championi, Thwaites ? ; large woody climber. Government Hill. (C. 1572).

Dalbergia tamarindifolia, Roxb. ; large woody climber. Waterfall. (C. 1492).

Dalbergia monosperma, Dalz. ; climbing shrub. Telok Bahang. (C. 220).

Dalbergia, sp. ; climbing shrub ; pod 2-3 inches long. Ayer Hitam. (C. 1437).

Pterocarpus indicus, Willd. ; is the principal shade tree planted in Penang. Not wild. (C.).

Pongamia glabra, Vent. ; tree 30-40 feet. Not uncommon along the Coast. (C. 382).

Derris scandens, Benth. ; climbing shrub. Common on the banks of tidal rivers. (C. 279).

Derris uliginosa, Benth. ; climbing shrub. (C. 918).

Derris elliptica, Benth. "Akar tubah" ; cultivated root used as an insecticide and for poisoning fish. Not seen in a wild state. (C. 1438).

Derris thyrsiflora, Benth. ; robust climber. (C. 248, 802).

Derris, sp. ; large climbing shrub, not referable to any of the above. Waterfall. (C.)

Cæsalpinia Bonducella, Flem.; straggling shrub. Tanjong Bunga. (C. 99).

Cæsalpinia sepiaria, Roxb. ; climbing prickly shrub. Top of Government Hill. (C. 385).

Cæsalpinia digyna, Rottb. Tanjong Bunga. (C. 448).

Peltophorum ferrugineum, Benth. ; tree 25-30 feet ; corolla yellow. A coast plant. (C. 370).

Cassia occidentalis, L. ; dwarf undershrub, common. (C.131).

Cassia sophora, L ; not identified.

Cassia siamea, Lam. ; small tree. (C. 92).

Cassia mimosoides, L. ; perennial 6-18 in. ; corolla yellow. common on Government Hill. (C. 829).

Cassia Kleinii, W. & A.; shrubby 2 feet. Government Hill. (C.).

Cassia javanica, L.; tree 30-40 feet. Waterfall. (C. 1576).

Cynometra polyandra, Roxb. is quoted from Penang and Malacca in the Flora of British India without any collector's name. Wallich and Roxburgh only got it in Khasiya and Silhet.

Cynometra cauliflora, L. "Nam-nam"; is cultivated; not seen wild. (C.)

Sindora Wallichii, Benth.; large tree; timber much valued. Not common. (C. 430).

Dialium Maingayii, Baker. "Kranji"; large tree, fruit sometimes eaten. (C. 440).

Saraca triandra, Baker; small tree. Government Hill, not common. (C. 163-647).

Bauhinia tomentosa, L. Penang, in the Fl. Brit. Ind. with no collector's name. It is certainly not wild in the peninsula.

Bauhinia cornifolia, Baker; climbing shrub. Government Hill. (C. 295).

Bauhinia emarginata, Jack; collected by Porter.

Bauhinia integrifolia, Roxb.; large woody climber; far more common than any of the other sps. (C. 300-500).

Bauhinia bidentala, Jack; petals orange; handsome plant when in flower. Government Hill. (C. 136).

Bauhinia, sp. near *bidentata*. Top of Government Hill. (C. 488).

Bauhinia elongata, Korth. Not identified. Collected by Porter. (Wallich 5782).

Bauhinia glauca, Wall. Not identified.

Bauhinia ferruginea, Roxb, var. *Griffithiana*. (C. 784). var *excelsa*. (C. 211).

Bauhinia purpurea, L. is cultivated, not wild I think. (C.).

Bauhinia lucida, Wall. is only known from leaf specimens of a plant collected at Calcutta said to have come from Penang. (No. 5779*b*).

Bauhinia, sps. undetermined. (C. 801,1541).

Neptunia oleracea, Lour.; floating herb; fl. yellow. Not common. (C.).

Entada scandens, Benth.; large climber. Government Hill. (C. 115).

Adenanthera pavonina, L. is often found growing near villages, but never in the forest. (C.).

Parkia biglandulosa, W. & A. is commonly cultivated. (C.).

Leucæna glauca, Benth. ; large shrub. Waterfall. (C. 49).

Mimosa pudica, L. is one of the pests of the island. (C.).

Acacia Farnesiana, Willd. Not uncommon, but a doubtful native (C.).

Acacia pennata, Willd. var. *pluricapitata* ; not seen.

Albizzia lebbek, Benth. ; tall tree. Telok Bahang. (C. 206).

Albizzia myriophylla, Benth. ; small tree. (C. 788-1702).

Albizzia, sp. ; tree 30-40 feet ; pod 6 × 2½ in. Waterfall. (C. 1921).

Calliandra umbrosa, Benth. ; quoted without authority for Penang in Flora of British India was really collected in Silhet.

Pithecolobium dulce, Benth. ; largely used as a fence plant. (C.)

Pithecolobium bubalinum, Benth. Not seen.

Pithecolobium microcarpum, Benth. ; small tree. (C. 1093).

Pithecolobium fasciculatum, Benth. ; small tree, rare. (C. 720).

Pithecolobium lobatum, Benth. "Jering"; tree 20-30 feet. (C. 105-711).

Pithecolobium contortum, Mart. ; shrub 4-10 feet. (C. 19-264).

Pithecolobium clypearia, Benth. ; small tree. Ayer Hitam. (C. 209-489).

Pithecolobium angulatum, Benth. : spreading tree. (C. 489).

ROSACEÆ.

Parinarium, costatum, Bl. "Poko Obie ;" tree 30-40 ft. (C. 259).

Parinarium oblongifolium, Hook. f. ? ; tree about 40 ft. : drupe 1¼-1½ in. (C. 2163).

Parinarium asperulum, Miq. ; tree 30-40 ft. ; petals white (C. 203).

Parinarium nitidum, Hook. fil. ; small tree 20-25 ft. ; drupe round the size of a large pea. (C. 147, 853).

Parinarium Griffithianum, Benth ; large tree ; drupe 1 in.

long of a dark colour. Muka Head, not common. (C. 1514, 2416).

Parastemon urophyllum, A. D. C.; small tree. branches slender. (C. 1149, 2480).

Prunus martabanica, Hook. f.; tree 40-50 ft. Government Hill. (C. 1512).

Pygeum lanceolatum Hook. f.; tree 20-30 ft.; branches slender, drooping. (C. 216, 735).

Pygeum parviflorum, Teys. and Binnend.; tree 20-30 ft.; fruit black. Government Hill &c., common. (C. 162).

Pygeum, sp., tree 30-40 ft.; fruit ¾ in. Nalm. (C. 938).

Rubus glomeratus, Bl,; common in all parts of the Island. (C. 74).

Rubus moluccanus, L. not seen.

Fragaria indica, Andr.; does not occur other than as a cultivated plant. (C.)

SAXIFRAGACEÆ.

Polyosma integrifolia, Bl.; tree 30-40 ft. Penara Bukit. (C. 1081).

Polyosma mutabilis, Bl.; tree 20-30 ft. Not uncommon. (C. 377, 758).

Polyosma, sp.; tree larger in all its parts than either of the preceding; may be a form of *P. integrifolia*. (C. 1165).

CRASSULACEÆ.

Bryophyllum calycinum, Salisb.; herb 2-3 feet. Common. (C.)

HAMAMELIDEÆ.

Maingaya malayana, Oliv.; tree about 25 feet tall with a stem 6-9 inches diameter. Government Hill. (C. 659).

RHIZOPHOREÆ.

Rizophora conjugata, L.; tree 20-40 feet, largely used for firewood. Common in tidal swamps. (C. 516).

Brugueria eriopetala, W. &. A.; tree not uncommon. (C. 514).

Carallia integerrima, D. C.; tree 30 feet. Government Hill 1000-2000 feet, not common. (C. 1078).

Pellacalyx axillaris, Korth.; medium-sized tree. (C. 937).

Pellacalyx Saccardianus, Scort.; small tree. Penara Bukit. (C. 1031).

Gynotroches axillaris, Miq; tree 25-30 feet, very common. (C. 324, 865).

Anisophyllea zeylanica, Benth. var.; tree 25-30 feet; branches slender, drooping. West Hill. (C. 746).

Anisophyllea grandifolia, Henslow; tree 30-40 feet. Government Hill, not uncommon. (C. 521).

Anisophyllea, sp.; tree 30-40 feet; drupe globular, 2-2½ inches. (This may be *A. Griffithii*). Waterfall. (C. 148, 1511).

COMBRETACEÆ.

Calycopteris floribnnda, Lamk.; large shrub. Waterfall (C. 184).

Combretum squamosum, Roxb.; large scandent shrub. (C. 258 1077).

Combretum chinense, Roxb. Not identified. Collected by Porter.

Combretum acuminatum, Roxb. Large climber, petals yellowish white. Balik Pulau. (C. 2474).

Quisqualis densiflora, Wall.; scandent shrub. (C. 190, 889).

MYRTACEÆ.

Tristania Whitiana, Griff. Not seen.

Tristania Maingayii, Duthie; "Palawan" tree 20-40 feet; bark smooth, grey. Government Hill, &c., common. (C. 238).

Rhodamnia trinervia, Bl.; "Monkoyan" tree 25 feet or more. Common. (C. 51).

Rhodamnia? sp.; tree 40 feet. Penara Bukit 1000 feet. (C. 1446).

Rhodomyrtus tomentosa, Wight; "Kamunting"; shrub 4-10 feet; abundant in places, fruit eaten. (C. 200).

Decaspermum paniculatum, Kurz; small tree 15-20 feet; not uncommon. (C. 33, 177).

Eugenia malaccensis, L. is cultivated. (C).

Eugenia Jambos, L. is not wild. (C).

Eugenia javanica, Lamk.;? small tree, not common. (C. 1114)

Eugenia grandis, Wight; "Krean batu"; large tree, valuable timber. Common near the coast. (C. 751).

Eugenia filiformis, Wall; small tree; branches slender, drooping. Government Hill. (C. 744, 1443).

Eugenia ramosissima, Wall.; tree. Pulau Betong. (C. 973).

Eugenia inophylla, Rox. (C. 974)?

Eugenia Thumra, Rox.; medium-sized tree. Waterfall. (C. 2410).

Eugenia acuminatissima, Kurz; tree. Government Hill. (C. 179).

Eugenia claviflora, Rox. in Flora of British India, is queried for Penang by Wallich in his catalogue which is apparently the only authority for its being a Penang plant.

Eugenia leptantha, Wight; medium-sized tree; fruit black, edible. (C. 697, 749).

Eugenia zeylanica, Wight; tree 20-30 feet, common. (C. 317, 511, 2245).

Eugenia grata, Wall. "Gelam Tikus"; small tree; bark used for tanning purposes. (C. 756).

Eugenia penangiana, Duthie; medium-sized tree. Government Hill 500 feet. (C. 193).

Eugenia skiophila, Duthie. Government Hill in deep shaded ravines. Maingay. Not met with since.

Eugenia chlorantha, Duthie; tree. West Hill 1,500 ft. (C. 180, 1448).

Eugenia lineata, Bl.; small tree. Muka Head &c., (C. 728 976? 2417).

Eugenia bracteolata, Wight; small tree. Government Hill (C. 247, 1089).

Eugenia valdevenosa, Duthie; small tree. Government Hill at 2,000-2,500 feet. (C. 55).

Eugenia expansa, Wall. Not identified. (Wall. cat. 3,567) collected by himself.

Eugenia subdecussata, Wall.; small tree. West Hill 2,500 ft. (C. 864).

Eugenia oblata, Wall?; large branching tree. Government Hill. (C. 212).

Eugenia lævicaulis, Duthie; small tree. (C. 2246).

Eugenia brachiata, Rox. "Krean batu;" tree 25-30 feet. Waterfall, common. (C. 32).

Eugenia verecunda, Wall ?; tree. Government Hill. (C. 654).

Eugenia, sps. undetermined in Herb. Penang. (C. 194, 653, 666, 759, 1090, 1152, 1442, 1604, 2224, 2228).

Pseudeugenia perakensis, Scort.; large shrub; not uncommon on Government Hill. (C. 461, 886).

Barringtonia speciosa, Forst.; medium-sized tree. (C. 909).

Barringtonia acutangula, Gaertn.; tree 25-30 ft.; not common. (C. 397).

MELASTOMACEÆ.

Melastoma malabathricum, L.; shrub 3-6 ft. (C. 71).

Melastoma imbricatum, Wall.; not identified. Wall. 4047,

Melastoma molle, Wall.; shrub 3-5 feet. Government Hill 1000-2000 ft., not common. (C. 683).

Melastoma appressum, Wall.; Penang Hill, Hullett.

Melastoma longifolium, Naud. Government Hill Road to Penara Bukit at 1800 feet. (C. 2789).

Allomorphia exigua, Bl.; ? shrub 1-3 feet, common. (C. 73,399).

Sonerila erecta, Jack; stem 3-12 inches; common from 1000-2000 feet (C. 1238).

Sonerila affinis, Arn.; stem 3-6 inches. Government Hill 2000-2500 feet; not common, (C.)

Sonerila moluccana, Roxb.; stem 1-2 inches. Not uncommon in damp shady places from sea-level up to 2000 feet. (C. 412).

Marumia nemorosa, Bl.; large climbing shrub; flower large, pink. Penara Bukit, rare. (C. 1008).

Dissochœta annulata, Hook. fil. West Hill. (C. 740).

Dissochœta punctulata, Hook. fil. Said to have been collected here by Walker. Wants confirmation.

Dissochœta bracteata, Bl.; large twining shrub. Government Hill 500-1000 feet. (C. 2298, 80 ?)

Dissochœta pallida, Bl Government Hill. (C. 2297).

Dissochœta intermedia, Bl. Not identified. Wallich 4052.

Dissochœta celebica, Bl. Not identified. Wallich No. 4050 4052 pars. These two numbers are labelled Singapore and

Penang 1822 and were probably obtained only in the former locality.

Dissochœta gracilis, Bl.; slender twining shrub. (C. 398).

Dissochœta ? sp. undetermined. (C. 1078).

Anplectrum glaucum, Triana. Not seen. Collected by McNair, Jack, Wallich, etc.

Anplectrum pallens, Bl.; twining shrub, branches slender. Government Hill 1000-2500 feet. (C. 471).

Anplectrum divaricatum, Triana. Not identified. Wallich (4051), and Walker.

Anplectrum annulatum, Triana. Not identified. Wallich Cat. No. 4056 obtained by Porter.

Anplectrum polyanthum, C. B. C. Waterfall. (C.) 61).

Medinilla rubicunda, Bl. Not seen. The plant numbered in Wallich's catalogue 4086 was collected at Cape Rachado in Sungei Ujong not in Penang.

Medinilla speciosa, Bl.; shrub 4-6 feet., panicle long, pink, pendulous. C. 874).

Pogonanthera pulverulenta, Bl.; shrub 6-10 feet. Batu Ferengy. (C. 1880).

Pachycentria macrorrhiza, Becc., compact growing shrub 2-3 feet; generally on rocks or in the forks of large trees. (C. 347).

Pachycentria, sp.; straggling shrub. Damp ravines at 2,000 feet. (C. 2225)

Astronia smilacifolia, Triana; small tree 25 feet. Top of Government Hill (C. 743).

Pternandra cœrulescens, Jack; tree 25-30 feet. (C. 879). Var. *Jackiana*. (C. 2220).

Pternandra capitellata, Jack. "Kulit nipis"; tree 20-30 feet. Government Hill, &c., common. (C. 67).

Pternandra paniculata, Benth. Not identified.

Kibessia echinata, Cogn., tree, branches rather slender. (C. 270).

Kibessia pubescens, Done. Not identified.

Kibessia, sp.; small tree apparently different to either of the preceding. Nalm. (C. 953).

Memecylon myrsinoides, Bl.; small compact growing tree; fl. blue. (C. 100-2219).

Memecylon heteropleurum, Bl.; small tree. West Hill. (C. 457-814).

Memecylon microstomum, C. B. C.; small tree. Government Hill 2,000 feet, not common. (C. 766).

Memecylon cœruleum, Jack; small erect shrub; common along the coast, not seen elsewhere. (C. 54).

Memecylon amplexicaule, Roxb.; shrub 8-10 feet tall. Government Hill 2,000 feet. (C. 695).

Memecylon garcinoides, Bl.; small tree. West Hill. (C. 816).

Memecylon acuminatum, Smith, var. *flavescens;* tree 25-30 feet. West Hill 1,000 feet. (C. 815).

Memecylon edule, Roxb.; tree 25 feet high or sometimes much less, fl. blue. Common along the coast. (C. 723).

Memecylon oligoneurum, Bl.? small tree. Ayer Hitam. (C. 1065).

Memecylon, sp.; erect shrub. West Hill. (C. 1773).

Memecylon, sp.; tree 20-30 ft. Government Hill 2000 ft. (C. 2243).

LYTHRACEÆ.

Crypteronia pubescens, Bl. "Bequoie;" tree 20-40 ft. very common at the Waterfall. (C. 110).

Crypteronia glabra, Bl.; large tree 40-50 ft. Government Hill 2500 ft., rare. (C. 739).

Crypteronia Griffithii, C. B. C.; tree 25-30 ft. (C. 1739, 660?)

Duabanga sonneratioides, Ham.; large tree. Balik Pulau, not common. (C. 678).

Sonneratia acida, L.; small tree. Tidal swamps. (C. 1084).

Sonneratia Griffithii, Kurz; small tree. (C. 1108).

ONAGRACEÆ.

Jussiæa repens, L. Common in ditches. (C. 1936).

Jussiæa suffruticosa, L. Rice fields, and generally in damp places. (C. 123, 1972?)

Ludwigia prostrata, Roxb. is not uncommon. (C. 57).

SAMYDACEÆ.

Casearia glomerata, Rox.; small tree. Pulau Betong. (C. 982, 2466?)

Casearia macrocarpa, C. B. C.; tree 20-30 ft. fl. small white. (C. 229, 960).

Casearia albicans, Wall. not seen. (Wallich no 7197).

Casearia, sp.; small tree; fl. minute, white. Government Hill 300-500 ft. (C. 2143).

Casearia sp.; small tree. West Hill. (C 1574).

Homalium longifolium, Benth.; tree 30-40 feet; conspicuous when in flower. (C. 301, 929).

Homalium sp.; tree 30-40 feet; leaves 6-8 × 3-4 inches. Waterfall, only one tree seen. (C. 1592).

Samyda esculenta, Roxb.? (C. 1019).

PASSIFLOREÆ.

Passiflora fœtida, L. is naturalized and much more common than any other plant of this order. (C. 1236).

Modecca singaporiana, Mast.; twining shrub. Penara Bukit, rare. (C. 869).

Modecca nicobarica, Kurz.; very slender twiner; fruit 1½-2 inches, bright red. Not uncommon. (C. 1521).

CUCURBITACEÆ.

Hodgsonia heteroclita, Hook. fil. Not seen. Collected by Porter (Wall cat 6685) and Phillips.

Trichosanthes palmata, Roxb. is not uncommon. (C.)

Gymnopetalum quinquelobium, Miq. Not identified. Collected by Porter.

Mormodica cochinchinensis, Spreng. (C. 890).

Cerasiocarpum? *penangense*, C. B. C. not indentified. A doubtful plant collected by Wallich. (No. 6704).

BEGONIACEÆ.

Begonia Evansiana, Andr. In Andrews' Botanist's Repository where this plant was first described it is said that Mr. Evan's collector found it growing in the clefts of rocks in the Island of Pulo Penang in 1808. It has never been since met with here and could hardly have been overlooked. It is a Chinese plant.

Begonia guttata, Wall. Not identified. (Wall Cat 3671*a*).

Begonia prolifera, A. D. C. Erroneously attributed to Penang on the strength of a plant collected by Finlayson which really came from one of the Siamese islands.

Begonia sinuata, Wall. Government Hill, &c., common. (C. 390, 481).

Begonia malabarica, Lam.? (C. 1262, 1738).

Begonia, sp. Pulau Betong, rare. (C. 1028).

UMBELLIFERÆ.

Hydrocotyle asiatica, L. "Pegaga;" a common herb; leaves used for curries &c. (C.)

Hydrocotyle rotundifolia, Roxb. Government Hill. (C. 1752).

ARALIACEÆ.

Aralia, sp. aff *A. Thompsonii*, Seem.; small prickly tree 10-15 ft. Government Hill. (C. 462).

Heptapleurum venulosum, Seem.; shrub. (C. 972.

Heptapleurum subulatum, Seem.; shrub. (C. 971, 1246).

Heptapleurum cephalotes, C. B. C.? tree 20-30 ft. not large, Government Hill. (C. 837).

Heptapleurum heterophylla, Seem. Moniot's Road. (C. 2301).

Heptapleurum, sp. collected at Pulau Betong (C. 1950).

Trevesia palmata, Vis. Var.; said to have been collected in Penang by Porter, was probably from Province Wellesley. (C.)

Arthrophyllum diversifolium, Bl.; tree 20-30 ft. not large. Waterfall. (C. 781).

Arthrophyllum pinnatum, C. B. C.; shrub. West Hill 2000 ft. (C. 334).

CORNACEÆ.

Marlea begoniæfolia, Rox.; small tree. Pulau Betong. (C. 940).

Marlea nobilis, C. B. C., Government Hill. (C. 1505).

Mastixia Maingayii, C. B. C.; tall tree. Government Hill. (C. 1564).

Mastixia, sp.; tree 30-40 ft. Pulau Betong. (C. 919).

CAPRIFOLIACEÆ.

Viburnum sambucinum, Reinw; large shrub, sometimes a small tree; flowers white, sweet scented. Top of Government Hill, common. (C. 278).

RUBIACEÆ.

Sarcocephalus Junghuhnii, Miq.; large tree. Government Hill 500 ft. (C. 303, 2751 ?)

Adina rubescens, Hemsley var. *acuminata;* medium-sized tree. Government Hill (C. 369).

Nauclea peduncularis, Wall; tree 25-30 ft. Sungei Penang, not common (C. 1056).

Uncaria sclerophylla, Roxb.; large climbing shrub. Government Hill. (C. 6, 185).

Uncaria attenuata, Korth. Government Hill. (C. 135).

Uncaria canescens, Korth. Government Hill. (C. 331).

Uncaria pteropoda, Miq. Government Hill. (C. 332, 1247 ?)

Uncaria ovalifolium, Roxb. not identified collected by George Porter.

Uncaria dasyneura, Korth. Government Hill. (C. 1070).

Uncaria gambier, Rox. is not wild in Penang.

Uncaria lanosa, Wall. Waterfall. (C. 917).

Uncaria acida, Roxb. is probably one of the above but the description is too meagre to guess which and no type is known to exist.

Coptosapelta flavescens, Korth.; climbing shrub; flower open white, gradually turning yellow. (C. 312, 1029).

Dentella repens, Forst.: prostrate herb; fl. white, ¼ in. (C. 1850).

Greenia Jackii, W. and A.; erect shrub, 6-10 ft.; a common plant near the Coast. (C. 106).

Argostemma pictum, Wall.; small herb; common on damp rocks at 1,000-2,000 feet. (C. 408).

Argostemma verticillatum, Wall. An error. Wallich's specimens came from Nepal, not Penang, as stated in Flora of British India.

Argostemma humile, Wall. Not met with. It was collected by Jack.

Argostemma unifolium, Benn. Damp rocks, common. (C. 990).

Argostemma elatostemma, Hook. fil. West Hill. (C. 962).

Argostemma, sps. undetermined. (C. 342, 955).

Hedyotis macrophylla, Wall. Not identified. (Wallich No. 842).

Hedyotis capitellata, Wall; climber; the most common of the genus. (C. 23).

Hedyotis mollis, Wall. Penara Bukit. (C. 1096).

Hedyotis vestita, Br. Not seen.

Hedyotis glabra, Br. Government Hill. (C. 39).

Hedyotis pinifolia, Wall. Not seen.

Hedyotis tenelliflora, Bl. (C. 2236).

Hedyotis hispida, Retz. Waterfall. (C. 1847).

Hedyotis congesta, Br. Penang Hill (C. 2846).

Hedyotis scabra, Wall. Bagan Jennal. (C.)

Hedyotis, sp. probably new. (C. 977).

Oldenlandia corymbosa, L.; a common weed. (C. 1849, 1988).

Oldenlandia diffusa, Roxb Waterfall; not very common. (C. 1846, 1845).

Oldenlandia Heynii, Br. Common. (C. 1848).

Oldenlandia trinervia, Retz., fl. minute, white. (C. 1844).

Ophiorrhiza mungos, L.; small herb. West Hill. (C. 979).

Ophiorrhiza discolor, Bl. Pulau Betong. (C. 1761).

Ophiorrhiza tomentosa, Jack. West Hill. (C. 907).

Mussænda glabra, Wall.; climbing shrub; common. (C. 116).

Mussænda villosa, Wall. (C. 289, 1934)?

Mussænda cordifolia, Wall. Not identified. (Wallich 6260). Imperfectly known.

Lucinœa morinda, D. C. Not seen here. "Penang and Singapore" No. 3487 Wallich.

Trisciadia truncata, Hook. fil. Not identified. On the Hill, Wallich in 1822. Not collected since.

Adenosacme longifolia, Wall.; shrubby, 1-2 feet; fruit white. (C. 845).

Aulacodiscus premnoides, Hook. fil.; small tree. Penara Bukit, not common. (C. 987).

Urophyllum Griffithianum, Wight; small tree. Government Hill, rare. (C. 1189, 2294). ?

Urophyllum glabrum, Wall.; common at 1000-2000 feet on Government Hill. (C. 260, 1759).

Urophyllum streptopodium, Wall.; small tree. West Hill. (C. 1770).

Urophyllum Blumeanum, Wight; Govornment Hill. (C. 261).

Urophyllum villosum, Wall.; large shrub; common. (C. 178).

Urophyllum ? sp.; shrub, smaller in all its parts than either of the preceding. (C).

Webera odorata, Roxb. Not identified. Collected by Wallich.

Webera fragrans, Bl.; small tree. (C. 480).

Webera, sp. Near *Maingayii*, Hook. fil.; large shrub. (C. 1060).

Webera mollis, Wall.? small tree. West Hill. (C. 745).

Webera stellulata, Hook. fil. Not identified. Wallich, Griffith.

Webera longifolia, Hook. fil. shrub 6-10 feet cymes 6-10 inches, pendulous; flower white. Waterfall. (C. 947, 1144).

Webera Wallichii, Hook. fil. Not identified. Wallich 8401. I.

Webera, sp.; large shrub. Waterfall. (C. 2217).

Anomanthodia auriculata, Hook. fil.; small tree. Moniot's Road, not common. (G. 1075).

Randia, sp. near *longiflora*, Lam.; slender tall tree. (C. 818).

Randia densiflora, Benth.; small tree; common. (C. 128-923).

Randia, sp. near *densiflora*, Benth. (C. 796).

Randia anisophylla, Lamk. "Randa"; tree 25-30 feet; fl. white fugacious. The commonest of all the Randias. (C. 164).

Randia exaltata, Griff.; spreading tree; corolla white with purple markings; fruit the size of a small orange, black. (C. 793).

Randia macrophylla, Br.; shrub; rare in Penang, (C. 966).

Randia, sp; large climbing shrub; fl. yellowish white; fruit 1 in., globular. Government Hill. (C. 927).

Randia, sp. small erect spinous shrub. Waterfall. (C. 1498).

Gardenia carinata, Wall.; tree 34-40 feet, spreading. (C. 525).

Gardenia tubifera, Wall.; tree 20-30 feet, compact, leafy. Government Hill. (C. 686).

Petunga longifolia, D. C. Not identified. Penang. Phillips, Wallich.

Petunga, sp.; small slender tree 15-20 feet. Government Hill. (C. 726).

Di lospora ? sp.; small tree. Penara Bukit. (C. 1449).

Timonius jambosella, Thw.; small close-growing tree; not uncommon. (C. 95-263).

Timonius Rumphii, D. C. Government Hill. 2844).

Canthium didymum, Roxb.; tree 25 feet. Waterfall. (C. 219).

Canthium glabrum, Bl.; small tree. Penara Bukit. (C. 988).

Canthium confertum, Korth. Government Hill. (C. 1694-1119).

Canthium horridum, Bl. Not seen. Cantley, Wallich.

Canthium, sp.; probably *oliganthum*, Miq. (C. 1756).

Ixora Brunonis, Wall. Not identified. Wallich. Phillips.

Ixora pendula, Jack; large shrub. Waterfall (C. 2240).

Ixora grandifolia, Zoll and Moritz. Not seen.

Ixora villosa, Roxb. Not identified. Wallich.

Ixora coccinea, L.; shrub; cultivated, wild as an escape. (C.)

Ixora amœna, Wall. Government Hill. (C. 79).

Ixora fulgens, Roxb.; tall shrub; common. (C. 479, 1730 ? 2257 ? 2255 ?)

Ixora congesta, Roxb.; shrub 6-10 ft. (C. 667, 1729).

Ixora, sp. near *congesta*; shrub, not exceeding 12 in. (C. 400).

Ixora opaca, Br.; small tree. Muka Head. (C. 719).

Ixora lucida, Br. Not identified. Wallich 6135, very little known.

Ixora nigricans, Br.; large shrub. Pulau Betong. (C. 986, 2451).

Ixora, sp.; small tree 20 ft. (C. 1112).

Pavetta indica, L. Pulau Betong. (C. 908).

Coffea ? sp.; small tree, fl. not seen. (C. 757, 1774).

Morinda tinctoria, Roxb. tree 15-25 feet; very common in places. (C. 679).

Morinda umbellata, L.; large climbing shrub. (C. 149).

Prismalomeris albidiflora, Thw.; shrub 3-5 ft.; fl. white common near the Coast. (C. 339).

Gynochthodes sublanceolata, Miq. Wallich No. 8385 "Penang" is the only authority for this here and the specimens have neither flower nor fruit, so are doubtful.

Psychotria malayana, Jack. Not seen.

Psychotria polycarpa, Miq.; climber. Penara Bukit. (C. 1095).

Psychotria sarmentosa, Bl.; common Government Hill. (C. 951).

Psychotria morindæfolia, Wall.; climber. (C. 478).

Psychotria stipulacea, Wall.; erect shrub, 4-6 ft. collected by Jack. (C. 732).

Psychotria Jackii, Hook. fil.; not seen in Penang, common at Pangkor. (C.)

Psychotria tortilis, Bl.; 6-18 in.; stem fleshy. Not uncommon. (C. 405, 1269).

Psychotria angulata, Korth.; erect shrub, 2-4 feet. (C. 726, 14)?

Psychotria Halferiana, Kurz. not met with. Recorded from "Penang Wallich" in Flor. Brit. Ind. but Wallich's No. 8368 was collected in Singapore where this plant is common.

Psychotria penangensis, Hook. fil.; Not identified, insufficiently known. Top of Government Hill, Maingay.

Psychotria sp.; sarmentose shrub, berries white. (C. 2215).

Psychotria? sps. undetermined. (C. 754, 981, 160).

Chasalia curviflora, Thw.; shrub 2-3 feet; stem rather fleshy; common (C. 414, 680).

Var longifolia. Top of Government Hill.

Geophila reniformis, Don.; creeping herb; corolla ivory white; fruit bright red; common. (C. 1930).

Lasianthus cyanocarpus, Jack; shrub 4-6 feet; fruit blue $\frac{1}{4}$-$\frac{1}{3}$ inch. Not uncommon. (C. 650, 1116).

Lasianthus, sp. near *Wallichii*, Wight; shrub 6-7 feet. Government Hill in damp ravines. (C. 284).

Lasianthus adpressus, Hook. fil. Not identified. Wallich 8443, 8442 in part.

Lasianthus densifolius, Miq. Not identified.

Lasianthus crinitus, Hook. L. Not identified. Collected by Wallich, locality doubtful.

Lasianthus Kurzii, Hook. fil. Not identified; locality doubtful more likely from Martaban.

Lasianthus chinensis, Benth.; tall shrub. West Hill 2000 feet. (C. 1594).

Lasianthus, sps. undetermined. (C. 760, 785).

Hydnophytum montanum, Bl. (C. 2164).

Pæderia fœtida, L.; slender twining shrub. (C. 24).

Spermacoce hispida, L.; prostrate herb; flower pink; common in open grassy places. (C. 1986, 1987).

COMPOSITÆ.

Vernonia chinensis, Less.; shrubby 1-2 feet; flower blue; abundant in orchards and waste places. (C. 931).

Vernonia arborea, Ham.; tree 25-30 feet. (C. 2-926.)

Vernonia cinerea, Less.; annual herb, 1-3 feet. Waterfall. (C. 1698).

Elephantopus scaber, L.; dwarf rigid herb; abundant in coco-nut plantations. (C. 130).

Adenostemma viscosa, Forst; erect annual herb. (C. 985).

Ageratum conyzoides, L.; fl. blue or white, abundant. C.).

Mikania scandens, Willd.; slender twining herb. Penara Bukit. (C. 1042).

Microglossa volubilis, D.C. Not seen. Collected by Jack and Wallich.

Blumea chinensis, D.C. Not seen.

Blumea balsamifera, D.C.; 6-10 feet. Tanjong Bunga. (C. 29).

Blumea lacera, D.C.; annual, 1-3 feet. Waterfall. (C. 1699).

Laggera flava, Benth. Not identified. Quoted as occurring in Penang in Flora British India but with no collector's name.

Pluchea indica, Less.; "Bluntas" shrubby 4-5 feet; common in marshy places. (C. 509).

Sphæranthus africanus, L.; annual herb 1-2 feet; not uncommon in rice fields. (C. 1942).

Eclipta alba, Hassk.; much branched, sometimes erect. (C. 1057).

Wedelia biflora, D.C.; climbing herb, fl. yellow. (C. 1568-40).

Spilanthes acmella, L.; common annual herb. (C. 1929).

Synadrella nodiflora, Gærtn.; branching herb; common in open places. (C. 913).

Bidens pilosa, L.; one of the commonest weeds. (C. 1669).

Gynura sarmentosa, D.C.; twining herb. Penara Bukit. (C. 1205).

Gynura Pseudo-china, D.C. Government Hill. (C. 2995).

Emilia sonchifolia, D.C.; annual herb. Penara Bukit. (C. 37).

Launœa pinnatifida, Cass. Government Hill.

GOODENOVIEÆ.

Scœvola Kœnigii, Vahl.; shrub 6-10 feet; branches stout, soft. Common along the coast. (C. 320).

CAMPANULACEÆ.

Pentaphragma begoniæfolium, Wall.; herb 6-12 in.; common 1,000-2,000 feet. (C. 329).

ERFIACEÆ.

Rhododendrom Teysmanii, Miq.; shrub 2-4 feet; flowers yellow. Government Hill 2,000 feet. (C. 530).

PLUMBAGINEÆ.

Plumbago zeylanica, L.; is not uncommon, but not indigenous. (C.).

Plumbago rosea, L.; found in one or two places, no indigenous. (C.).

MYRSINEÆ.

Mœsa ramentacea A. D.C.; large rambling shrub; never a tree in Penang. Common. (C. 48-251).

Mœsa ramentacea var ovata, not identified.

Myrsine capitellata, Wall; small tree. Government Hill. (C. 1013).

Embelia ribes, Burm.; large climbing shrub, common. (C. 18).

Embelia ribes var. pinangiana, Oliv.; fruit larger than the type, of a reddish colour. (C. 306).

Embelia coriacea, A. D. C.; climber, rare. (C. 1047).

Embelia canescens, Jack. Not identified. Only collected by Jack.

Embelia Limpanii, Schiff. Government Hill. (C. 305).

Labisia pothoina, Lindl.; shrubby 6-10 inches, common. (C. 1192).

Ardisia lanceolata, Rox. Not identified. Roxburgh.

Ardisia colorata, Rox.; small tree. Penara Bukit. (C. 1052.)

Ardisia divergens, Rox. Not identified. Jack and Maingav.

Ardisia tuberculata, Wall. var. *Ophirensis;* small shrub. West Hill 2500 feet. (C. 2249).

Ardisia porosa, Clarke; straggling shrub. West Hill 2000 feet. (C. 1769).

Ardisia crenata, Roxb.; shrub 2-4 feet; very common. (C. 337).

Ardisia villosa, Roxb.; shrub 1-2 feet. Government Hill. 2000 feet. (C. 1597).

Ardisia oxyphylla, Wall.; small tree. Government Hill. (C. 668).

Ardisia humilis, Vahl; small tree 20-25 feet. (C. 217).

Ardisia, sp. in herb. Penang; leaves 10 × 4½ inches; berry ¼ inch. (C. 2755).

Pimelandra Wallichii, A. D. C.; small tree 10-15 feet. Government Hill, not uncommon. (C. 1156).

Aegiceras majus, Gaertn.; tree 30 feet; common in swamps near the coast. (C. 62, 513).

SAPOTACEÆ.

Chrysophyllum sp.; tree 25-30 feet. Batu Feringgi. (C.) 1072).

Sideroxylon malaccense, Clarke; tree 40 feet; fruit 1-1½ inches, rusty tomentose. (C. 1452).

Sideroxylon ferrugineum, Hk. & A.; tree 40 feet, coast. (C. 273, 703).

Sideroxylon, sp. near *firmum*, Burck; small tree. West Hill 2,500 feet, rare. (C. 1575).

Sideroxylon, sp.; small tree. Batu Feringgi. (C. 2254).

Sideroxylon, sp.; small tree. Penara Bukit. (C. 1450).

Dichopsis gutta, Benth.; tree 50-60 feet. Government Hill, &c. (C. 780).

Bassia Motleyana, Clarke; tree 50 feet. Government Hill, not common. (C. 1451).

Payena Maingayii, Clarke; small tree. West Hill 2,000 feet. (C. 1565).

Payena malaccensis, Clarke. Telok Bahang. (C. 159).

Payena lucida, A. D.C. Not identified. (Wallich 4147).

Payena costata, tree. Waterfall (C. 1516).

Payena sp.; near *Leerii*, Hook. fil.; tree 50-60 feet. Government Hill. (C. 777).

EBENACEÆ.

Maba buxifolia, Pers.; low close growing bush. Telok Bahang, not common. (C. 708).

Maba merguensis, Hiern? large shrub. (C. 705).

Maba sp.; large tree. Muka Head. (C. 718).

Maba sp.; small tree. Penara Bukit. (C. 448).

Diospyros apiculata, Hiern; shrub 6-8 feet. Government Hill 1,000 feet, rare. (C. 1584).

Diospyros microphylla, Bedd.; small tree. Government Hill 300 feet. (C. 1513).

Diospyros sapotoides, Kurz; small tree. Telok Bahang. (C. 1564).

Diospyros decipiens, Clarke; small tree about 20-30 feet. Telok Bahang. (C. 1453-1454).

Diospyros sp.; near *oleifolia*, Wall.; tall tree. Government Hill 1,200 feet. (C. 1573).

Diospyros undulata, Wall.; tree medium-size, 40 feet or more. Telok Bahang, &c. (C. 1085).

Diospyros lucida, Wall.; tree 25-30 feet. Government Hill, near the chalet. (C. 250).

Diospyros oblonga Wall. "Koomoi"; tree 30-40 feet high. Sungei Penang. (C. 2487).

Diospyros venosa, Wall. Not identified.

Diospyros sp.; tree 20-30 feet; leaves 6-8 × 2½ in.; fruit conical ¾-1 in. Waterfall. (C. 2221).

Diospyros sp. near *ebenum* small tree. Batu Feringgi. (C. 1602).

Diospyros sp. *aff decipiens*, Clarke; small tree, 20 feet. Bukit Padre. (C. 1276).

Diosypros sp.; small tree. Moniot's Road. (C. 1693).

Diosypros sp.; small tree; leaves 10-12 inches; flower small white. (C. 898, 1932).

STYRACACEÆ.

Symplocos ferruginea, Roxb.; tree 25 feet; common. (C. 206).

Symplocos sp. aff. *fasciculata*, Zoll.; tree 30-40 feet. Penara Bukit. (C. 1039).

Symplocos adenophylla, Wall; small tree; not uncommon. (C. 402).

Symplocos racemosa, Roxb.; tree 40-50 feet; flower white. Muka Head and Government Hill. (C. 715).

Symplocos cerasifolia, Wall.; tree 30-40 feet. Government Hill 1200 feet. (C. 1503).

Symplocos rubiginosa, Wall.; small tree. Penara Bukit and Government Hill. (C. 528, 1692).

Symplocos sp. near *rosea*, Benth.; small tree; fruit ¾ inch long. Penara Bukit, but one tree seen. (C. 1099).

Symplocos sp.; small tree. West Hill. (C. 325).

Symplocos sp., tree. Muka Head. (C. 958).

Styrax serrulatum, Roxb.; tree 25-30 feet; branches slender, drooping; flower white. (C. 1187, 1538).

OLEACEÆ.

Jasminum pubescens var. bracteata, Rox. Not identified. Recorded from Penang, Wallich in Fl. Brit. Ind. Wallich's specimens (No. 2867) came from the Calcutta gardens, and were originally obtained from Bencoolen in Sumatra.

Jasminum Maingayii, Clarke. Government Hill. (C. 643).

Jasminum befarium, Wall. (C. 83)?

Jasminum scandens, Vahl. (C. 1920, 42)?

Jasminum subtriplinerve, Bl. (C. 643).

Jasminum sp. near *dispermum*, Wall. (C. 1227).

Linociera pauciflora, Clarke; tree 30 feet; not uncommon. (C. 277, 695).

Olea maritima Wall.; small tree. Coast. (C. 222).

Olea dentata, Wall.; small tree. Telok Bahang. (C. 950).

Myxopyrum nervosum, Telok Bahang. (C. 2891).

APOCYNACÆ.

Willughbeia coriacea, Wall.; large climbing shrub. Waterfall. (C. 1500, 847).

Willughbeia sp.; large shrub. Penara Bukit. (C. 1121).

Chilocarpus Maingayii, Dyer.? (C. 475).

Leuconotis eugeniifolius, A. D. C. "Getah Gharu"; scandent shrub; not uncommon. (C. 1061).

Melodinus monogynus, Roxb. Not identified; It is said to have been collected by Maingay, otherwise only known from the Himalaya and Assam.

Melodinus orientalis, Bl.; large rambling shrub; fruit the size of a small orange. (C. 687).

Melodinus coriaceus, Oliv.; large climber reaching to the top of tall trees; fruit round, the size of an orange. (C. 1040).

Alyxia coriacea, Wall. Not identified. Collected by Wallich.

Alyxia pilosa, Miq. is a doubtful Penang plant. Not seen. Mount Ophir is the correct locality for this plant.

Alyxia stellata, Roem. and Sch. Not identified. Collected by Wallich.

Hunteria corymbosa, Rox.; small tree, common. (C. 237, 707).

Cerbera odollam, Gærtn.; tree 20-30 ft.; common. (C.)

Vinca rosea, L. is quite common in open sandy places. (C.)

Alstonia scholaris, Br. "Getah Paule;" tall straight tree; wood white, light. (C.)

Alstonia macrophylla, Wall. "Chengah Petrie;" tree tall but not large. Common. (C. 378).

Alstonia angustifolia, Wall. Not identified. Collected by Maingay.

Dyera costulata, Hook. fil.; large tree; wood very similar to that of *Alstonia scholaris*, not common. (C.)

Tabernæmontana corymbosa, Rox; shrub 6-8 ft. Pulau Betong, not common. (C. 1763).

Tabernæmontana peduncularis, Wall.; small shrub. (C. 790).

Tabernæmontana malaccensis, Clarke; small shrub 2 feet. Waterfall, not common. (C. 1775).

Parsonsia spiralis, Wall; twining shrub. Batu Feringgi. (C. 450).

Parsonsia ovata, Wall.; Old road to Batu Feringgi. (C. 820).

Wrightia lævis, Wall.; tree 40-50 ft.; fl. greenish white, 1 in. in diam. Government Hill. (C. 1767).

Wrightia.? sp.; small tree. Pulau Betong. (C. 848).

Strophanthus Jackianus, Wall. "Bunga hantu"; shrub 3-4 feet; flower brick red, fugacious. (C. 188).

Strophanthus dichotomas, D. C. not seen. Common in Singapore. The drawing labelled Penang in Herb. Kew (the only authority for its occurring here) was probably wrongly localised.

Urceola elastica, Roxb.; large climbing shrub. Government Hill. (C. 823).

Urceola lucida, Benth.; woody climber. Muka Head. C. 661, 941).

Urceola branchysepala, Hook fil. Panti Achie. (C. 403).

Parameria glandulifera, Benth,; climbing shrub. Government Hill, rare. (C. 1142).

Parameria polyneura, Hook fil? Waterfall. (C. 1455, 1456).

Parameria densiflora, Oliv.; large climbing shrub; flower dull red. Government Hill. (C. 158).

Chonemorpha macrophylla, Don; large climber. (C. 832).

Aganosma marginata, Don; large shrub. (C. 664).

Aganosma? sp.? climbing shrub; flower white. Penara Bukit. (C. 2441).

Rhynchodia Wallichii, Benth.; flower white, fragrant. (C. 838).

Anodendron pauciflorum, Hook fil; climbing shrub. Government Hill. (C. 663, 1457).

Anodendron paniculatum, A. D. C.; large climbing shrub. (C. 1740, 2358.)

Ichnocarpus ovatifolium, A. D. C. Tanjong Bunga. (C. 810).

Mircrochites polyantha, Miq.; climber, covering rocks and trees; roots emitted the whole length of the stem. (C. 850).

ASCLEPIADEÆ.

Antherandra acutifolia, Dcne. Not identified. Wallich (4458).

Streptocaulon Wallichii, W. and A.; twining shrub; very common. (C. 4, 472, 2122).

Secamone emetica, Br.; slender twining shrub. (C. 1896, 225).

Secamone Finlaysonii, Wight? (C. 922).

Toxocarpus Griffithii, Dcne. Not identified. Collected by Porter.

Toxocarpus acuminatus, Benth.?; glabrous twining shrub; fl. white. Government Hill. (C. 244).

Calotropis gigantea, Br. I have seen only in gardens. (C.).

Asclepias curassavica, L. is met with rarely. (C. 344).

Cynanchum ovalifolium, Wight; twiner. Penara Bukit. (C. 871, 1270).

Cynanchum corymbosum, Wight. Not identified. 8231 F, Wallich.

Gongronema, sp.; West Hill. (C. 1545).

Pergularia puberula, Miq.; twining shrub, rare. (C. 932).

Tylophora hirsuta, Wight Not identified.

Tylophora Wallichii, Hook. fil.; slender twiner. Pulau Betong, very rare. (C. 933).

Heterostemma, sp.; twiner. Telok Bahang. (C. 1707).

Dischidia nummularia, Br.; slender herb; often completely covering trunks of trees or rocks. (C.).

Dischidia benghalensis, Colebr. Not common. West Hill at from 2000-2500 ft. (C. 2160).

Dischidia rhombifolia, Bl. Batu Feringgi. (C. 1897).

Hoya multiflora, Bl. The only evidence for this here is a drawing labelled Penang preserved at Kew.

Hoya parviflora, Wight. (C. 689).

Hoya latifolia, Don. Not seen.

Hoya obtusifolia, Wight, Not identified. "Penang? Wallich" (No 8167) probably from elsewhere.

Hoya coronaria, Bl. Telok Bahang. (C. 236).

Hoya diversifolia, Bl. Not uncommon on rocks close to the sea. (C. 928).

Hoya coriacea, Bl. Not identified. Penang? Wallich 8163. (Probably wrong locality).

Ceropegia lucida, Wall.; slender twining herb. Penara Bukit, rare. (C. 1007).

LOGANIACEÆ.

Buddleia, sp. Top cf Government Hill, probably introduced. (C. 1058).

Fagræa obovata, Wall.; small tree. Government Hill, not common. (C. 346, 2432).

Fagræa racemosa, Jack; small tree. 10-15 ft. Common at the Waterfall. (C. 280).

Fagræa fragrans, Rox. "Temusu;" tree 20-30 ft.; not common. (C. 314, 1566).

Fagræa Wallichiana, Benth. "Temusu Bukit;" tree 40-50 ft.; fl. yellow. Common at 2000-2500). ft., and a valuable timber. (C. 375).

Strychnos laurina, Wall.; climbing shrub. (C. 1021).

Strychnos malaccensis, Benth; Muka Head. (C. 1515).

Strychnos pubescens, Clarke. (C. 970).

Strychnos Tieute, Lesch.? (C. 709, 1490).

BORAGINEÆ.

Cordia subcordata, Lam.; large shrub. Coast. (C. 393).

Ehretia Wallichiana, Hk. f. & T.; tree 40-50 ft. (C. 1034).

Tournefortia Wallichii, DC; large rambling shrub. (C. 1011).

Heliotropium indicum, L.; common annual weed. (C. 345).

CONVOLVULACEÆ.

Erycibe Princei, Wall. Recorded from Penang as collected by Wallich in Flor. Brit. India is an error. Wallich's plant came from Singapore where it is common.

Erycibe Griffithii, Clarke; ? large climbing shrub; fruit 1½ inch. long, brown. Government Hill. (C. 772).

Erycibe, ?; large scandent shrub. (C. 2837).

Erycibe coriacea, Wall. scandent shrub; berry ¼ inch. Government Hill. (C. 911, 1273).

Erycibe, sp.; large climber; named *E. Griffithii* in herb. Penang but is not the same as 772. (C. 181).

Argyreia tiliæfolia, Wight. Pulau Petong. (C. 1970).

Lettsomia strigosa, Roxb. Waterfall. (C. 498).

Lettsomia adpressa, Miq.: twiner; corolla rosy pink. A rather common plant. (C. 318).

Lettsomia penangiana, Miq.; large climber; flower not seen. (C. 1586).

Ipomea angusfolia, Jacq; slender twiner; corolla yellow (C. 1068).

Ipomea denticulata, Choisy. (C. 1974).

Ipomea staphylina, Roem. & Sch.; large climber. (C. 470).

Ipomea cymosa, Roem. & Sch.; twiner; corolla pink. Bukit Padre. (C. 1083).

Ipomea pes-tigridis, L. Open sunny places, (C. 3033).

Ipomea Turpethum, Br. (C. 1703).

Calystegia hederacea, Wall. "Penang, Porter."

Evolvulus alsinoides, L.; prostrate herb; corolla pale blue. Open sandy places. (C. 1601).

Breweria cordata, Bl.; large climber; corolla white, not uncommon. (C. 1066).

SOLANACEÆ.

Solanum nigrum, L, herb 12-18 in.; fruit black. (C.).

Solanum torvum, Swartz; shrub 4-6 feet. (C. 90).

Solanum indicum, L.; shrubby 3-4 feet. (C. 10).

Solanum sarmentosum, Nees. 2628 F. Penang 1822 Wallich. (locality probably wrong).

Solanum trilobatum, L.; climber, rare. (C. 851).

Solanum aculeatissimum, Jacq; procumbent; berry globular 1-1½ in., orange. (C.).

SCROPHULARINEÆ.

Adenosma capitatum, Benth.; herb 1-2 feet; fl. blue Waterfall (C. 1886).

Adenosma hirsutum, Kz. (C. 22381).

Limnophila villosa, Bl. Waterfall. (C. 1839).

Herpestis Monniera, H. B. & K.; small herb; common in swamps. (C. 1939).

Artanema sesamoides, Benth.; large herb; fl. lilac. Not uncommon in the south of the island. (C. 945).

Torenia polygonoides, Benth. Not seen.

Torenia mucronulata, Benth.; prostrate herb. Waterfall. (C. 1837).

Torenia ciliata, Smith. Waterfall, not common. (C.).

Vandellia crustacea, Benth.; fl. lilac or blue. (C. 1854).

Vandellia pedunculata, Benth. "Kra Nasi." Paddy fields, common. (C. 1973).

Bonnaya veronicæfolia, Spreng.; fl. white and pink, or lavender and white; common. (C. 1852).

Bonnaya brachiata, Link. & Otto. (C. 1851).

Scoparia dulcis, L. "Cha Padang." Very common. (C. 688).

Striga lutea, Lour.; herb 4-6 in.; fl. yellow. Common in open places among long grass. (C. 1840).

LENTIBULARIEÆ.

Utricularia flexuosa, Vahl.; fl. golden yellow; common in ditches and rice fields. (C. 519).

Utricularia bifida, L.; not uncommon in marshy land among grass. (C. 1177).

Utricularia racemosa, Wall.; fl. white; grows with *U. bifida* at the Waterfall. (C.).

Utricularia orbiculata, is said to have been collected in Penang near the Waterfall by Prof. Goebel. Not seen.

GESNERIACEÆ.

Æschynanthus Lobbiana, Hook. fil.; Government Hill. (C.).

Æschynanthus marmorata, N.E. Brown; fl. green and yellow. Government Hill 2,000-2,500 feet; generally on large trees. (C. 1700-2142).

Didymocarpus cordata, Wall.; 1-2 feet or more high; corolla white. Damp shady ravines. (C. 452).

Didymocarpus corchorifolia, Wall. Government Hill. (C. 1239).

Didymocarpus crinita, Jack; stem 6-12 in.; corolla white (pale purple form in Perak) common (C. 410).

Didymocarpus reptans, Jack; creeping; corolla violet or white. Waterfall, not common. (C. 1706).

Didymocarpus incana, Benth.; leaves silvery grey; corolla blue. Common on damp rocks. (C. 297).

Didissandra frutescens, Jack; shrubby, 2-3 feet. Damp ravines at 1,600-2,000 feet. (C. 828).

Cyrtandromœa acuminata, Benth.; stem 1-2 feet; corolla white. Penara Bukit, rare. (C. 1016).

Stauranthera grandiflora, Benth.; herb 3-6 in.; fl. lavender and yellow. Balik Pulau, very rare (C. 1753).

Rhynchotechum parviflorum, Bl. var. *penangensis*, not identified. A very doubtful plant based on imperfect material.

Cyrtandra dispar, D. C.; shrub 3-5 ft. Moniot's Rd. (C. 1204).

Cyrtandra decurrens, De Vriese; stem 12-18 in, fleshy; corolla greenish white. (C. 1018).

Cyrtandra, sp. Pulau Betong. (C. 3035).

BIGNONIACEÆ.

Oroxylum indicum, Vent. tree 30-40 ft. Pulau Betong, not common. (C. 983).

Dolichandrone Rheedii, Seem.; small tree; corolla large white, fugacious. Tidal Swamps. (C. 1184).

Stereospermum chelonioides, D. C. tree 50-60 ft; corolla pale yellow; Capsule 12-24 in long. (C. 2431).

Stereospermum glandulosum, Miq.; small tree. (C. 140).

Diplanthera bancana, Scheff.; tree 30-40 ft.; corolla yellow. Not common. (C. 870, 1569).

PEDALINEÆ.

Sesamum indicum, D. C. annual herb 1-2 ft. (C. 1582).

ACANTHACEÆ.

Thunbergia alata, Bojer. Government Hill. Introduced. (C).

Nelsonia campestris, Br.; prostrate herb. Balik Pulau. (C. 1750).

Ebermaiera lanceolata, Hassk. Not identified. Penang Porter, Wall. No. 7489.

Ebermaiera angustifolia, T. And.; dwarf herb. Pulau Betong. (C. 1931).

Ebermaiera axillaris, Nees. Not identified. Is stated by Anderson to have been collected by Wallich, No. 2414.

Ebermaiera elongata, Nees. "Wallich in Penang." Nees makes no mention of it in the Plantæ Asiaticæ Rariores which he doubtless would have done had he found it in Wallich's collections. It is a native of Java.

Ebermaiera lasiobotrys, Nees.; Pulau Betong. (C. 1350).

Ebermaiera racemosa, Miq.; herb 6-10 in. Common on West and Government Hills 2,000-25,000 ft. (C. 406).

Hygrophila salicifolia, Nees. Pulau Betong. (C. 1757).

Ruellia repens, L.; stem 9-12 in.; corolla rose colour fugacious. (C. 1876).

Strobilanthes Maingayii, Clarke. Not identified. One of Maingay's plants, locality quite uncertain.

Strobilanthes collinus, Nees. Not identified. Collected by Porter. Wall. Cat. 2343.

Strobilanthes, sp.; shrubby; corolla white. Government Hill. (C. 298).

Strobilanthes, sp. Muka Head. (C. 954).

Strobilanthes, sp.; prostrate herb. Government Hill 2,000 feet. (C. 2761).

Acanthus ebracteatus, Vahl. Common in tidal swamps. The seeds are reputed cure for boils. (C. 510).

Barleria conspicua, Nees. Not identified.

Asystasia intrusa, Br.; stem 3-4 ft. Waterfall. (C. 1853).

Asystasia coromandeliana, Nees; fl. white. purple, or yellow. Common. (C. 2419).

Asystasia Kunthiana, Nees. Not identified. A doubtful plant collected by Wallich.

Eranthemum album, Nees. Not seen. Collected by Porter.

Eranthemum malaccensis, Clarke; small shrub. Waterfall, not uncommon. (C. 499, 348).

Eranthemum graciliflorum, Nees. Not identified. A very doubtful plant. Wall. Cat. 2427.

Andrographis paniculata, Nees; stem 6-18 in. Not uncommon in open spots. (C. 1877).

Justicia inconspicua, Wall. Cat. 2475 is absolutely unknown.

Justicia gandarussa, L. Balik Pulau. (C. 791).

Justicia decussata, Roxb. Pulau Betong. (C. 1765).

Justicia ptychostoma, Wall. Not identified. Collected by Porter.

Justicia Maingayii, Clarke. Not identified. Collected by Maingay.

Adhatoda vasica, Nees; shrub 4-5 ft. Ayer Hitam. (C. 1017).

Peristrophe acuminata, Nees. Balik Pulau. (C. 681).

VERBENACEÆ.

Lantana indica, L.; shrub 1-2 feet; fl. pink. Balik Pulau not common. (C. 121).

Lantana camara, L.; has run wild all over the Island.

Stachytarpheta indica, Vahl; 2-3 feet. Common. (C. 867).

Callicarpa arborea, Rox.; small tree 25-30 feet. Telok Bahang, not common. (C. 699).

Callicarpa cana, L. apparently Wallich's No. 1834. 1 is taken as the authority for this as a Penang plant in the Flora of British India but that was cultivated in the Calcutta gardens.

Callicarpa pedunculata, Br. Wallich 1834, 2. Collected by Geo. Porter. Not seen.

Callicarpa longifolia, Lamk.; shrub 6-10 feet; berry white. Government Hill. (C. 309).

Premna cordifolia, Rox. shrub. (C. 681.) ?

Premna divaricata, Wall; scandent shrub. (C. 215).

Gmelina asiatica, L. tree 25-30 feet. Common (C. 454).

Vitex trifolia, L.; small tree. (C. 98).

Vitex pubescens, Vahl. "Halban"; a very common tree. (C. 64).

Vitex coriacea, Clarke; tree compact, 20-25 feet; flower purple. Government Hill. (C. 323).

Vitex vestita, Wall.; small tree; corolla yellow. Government Hill. (C. 265).

Vitex glabrata, Br.; tree, larger than either of the preceding. Not common. (C. 1071).

Clerodendron Lobbii, Clarke. Not identified. Collected by Lobb.

Clerodendron calamitosum, L.; small shrub. Introduced.? (C).

Clerodendron deflexum, Wall. ; shrub 1-3 feet. Government Hill. (C. 81).

Clerodendron paniculatum, Rox. ; shrub 6-10 feet ; corolla red. Not seen except near villages. (C. 313).

Clerodendron neriifolium, Wall. ; common on the sea shore. (C. 2782).

Clerodendron villosum, Bl. ; shrub 4-6 ft. A far more common plant than either of the others. (C. 101).

Clerodendron acuminatum, Wall. ; shrub. (C. 1539).

Peronema canescens, Jack ; tree 25-30 ft. Common near the race course ; not seen elsewhere. (C. 2427).

Sphenodesma triflora, Wight ; scandent shrub. Waterfall. (C. 210).

Sphenodesma barbata, Schauer. Collected by Geo. Porter.

Sphenodesma pentandra, Jack ; large rambling shrub (C. 269).

Avicennia officianalis, L. ; small tree common in Mangrove swamps. (C.).

LABIATÆ.

Ocimum basilicum, L. ; herb 2 ft. Tanjong Tokong. (C. 2492).

Mochosma polystachyum, Benth ; annual herb. (C. 34).

Coleus atropurpureus, Benth. Waste places, common. (C.).

Hyptis brevipes, Poit. ; is a very common plant. (C. 1111).

Hyptis suaveolens, Poit. ; is not nearly so common as *brevipes*. (C. 1250).

Pogostemon patchouli, Pelletier ; found as an escape, is not in my opinion indigenous. (C.).

Dysophylla auricularia, Bl "Ekor Kuching." Common in damp places. (C. 868).

Anisomeles ovata, Br. Waterfall &c. ; common. (C. 65).

Anisomeles malabarica, Br. Not identified. Collected by Wallich No. 2037, 2.

Leucas zeylanica, Br. Annual herb 1-2 ft. ; corolla white. Very common. (C. 409).

Leucas linifolia, Spreng. is a much smaller plant. (C. 1115).

Gomphostemma parviflorum, Wall. not seen. There is some error in the Flora of British India and in Bentham's paper on the Labiatæ in the Plantae Asiaticæ Rariores ii 12. *G. parviflorum* No. 2158 was collected at Silhet but *G. crinitum.* Wall. Cat. No. 2159 was collected in Penang by Wallich in 1822. It has not been gathered there since.

PLANTAGINEÆ.

Plantago major, L. Government Hill 2,500 feet. (C. 2157).

NYCTAGINEÆ.

Boerhaavia repens, L. Not uncommon near George Town. (C. 902).

AMARANTACEÆ.

Amaranthus spinosus, L. "Bayam." A good vegetable (C. 245).

Cyathula prostrata, Bl. Common in coco-nut gardens. (C. 17-944).

Pupalia atropurpurea, Miq. The authority for this is Wallich's Catalogue 6933-2. Penang and Singapore, as the plant has never since been seen in the Malay Peninsula, the locality is probably wrong.

Achyranthes aspera, L. Common in sandy soils. (C. 1835).

Alternanthera sessilis, Bl. Common everywhere. (C. 1043).

POLYGONACEÆ.

Polygonum tomentosum, Willd.; tall herb. Damp places. (C. 16).

Polygonum barbatum, L. Pulau Betong. (C. 943).

Polygonum strigosum, Br. Not seen. Collected by Wallich.

Polygonum pedunculare, Wall. Commoner than either of the others. (C. 921).

NEPENTHACEÆ.

Nepenthes ampullaria, Jack. Penara Bukit, rare. (C.).

Nepenthes phyllamphora, Willd. Common among low bushes in swampy places. (C. 1202).

Nepenthes albo-marginata, Lobb. Government Hill, common. (C.).

ARISTOLOCHIACEÆ.

Thottea dependens, Klotzsch ; shrubby 1-2 feet. Waterfall. (C. 1170-1507).

Aristolochia Roxburghii, Klotzsch ; twiner. Waterfall. (C. 2464).

Aristolochia, sp. leaves deeply lobed. Government Hill. (C. 330).

Bragantia tomentosa, Bl. Waterfall. Common. (C. 2754).

PIPERACEÆ.

Piper ribesioides, Wall. West Hill, rare. (C. 2256).

Piper sumatranum, Cas. Not identified. Wallich 6646B. Not only is the identification of this specimen doubtful but the locality Penang is marked doubtful in the catalogue.

Piper caninum, Bl. Balik Pulau. (C.).

Piper longum, L. "Kudak." Common. (C. 887).

Piper peepuloides, Rox. Government Hill 2,000 ft. (C. 2291).

Piper miniatum, Bl. Batu Feringgi. (C. 821, 2290).

Piper rostratum, Rox. ? West Hill. (C. 967).

Piper penangensis, Cas. Not identified. Wallich 6644 B.

Piper lonchitis, Roem. and Schultes. Government Hill. (C. 734).

Piper leptonema, Hook. fil. (C. 1771).

Piper attenuatum, Ham. Not identified. Locality very doubtful.

Piper subpeltatum, Willd. Wallich 6638*a*. Not seen.

Piper sulcatum, Bl. Government Hill. (C. 443).

Piper porphyrophyllum, N. E. Brown. Common on Government Hill. (C.)

Piper, sp. ; near *Blumii*. Government Hill. (C. 792).

Pipermia pellucida, Kunth. ; herb, succulent, 6-18 in. Common about George town. (C. 1958).

CHLORANTHACEÆ.

Chloranthus officinalis, Bl. ; compact undershrub ; berries white. (C. 1180, 1708).

Chloranthus brachystachys, Bl. ; shrubby, less compact than the preceding, berries red. (C. 1050).

MYRISTICACEÆ.

Myristica fragrans, Houtt. Cultivated, often found on land that has reverted to forest. (C.).

Myristica bracteata ; A. D. C. ; large tree 50 ft. high. Government Hill, rare. (C. 1497).

Myristica Maingayii, Hook. fil. ; a tree 50-60 ft. high and 18-24 in. in diam. ; fruit oblong 3 × 2 in. larger than *M. fragrans* Government Hill, rare. (C. 2455).

Myristica elliptica, Wall. ; tree 30-40 ft. ; fruit larger than *M. fragrans ;* and mace blood-red, laciniate as stated by Maingay. (C. 1122).

Myristica superba, Hook. fil. ; collected by Phillips. (C. 2966).

Myristica tomentosa, Hook, fil. ; tree 25-30 ft. Waterfall and other places (C. 1748).

Myristica, sp. closely resembling *M. Canarioides*, King. (C. 943).

Myristica Griffithii, Hook. fil. ; a tree 40-50 ft. Government Hill 1500 ft. (C. 2406).

Myristica Farquhariana, Wall. ; medium-sized tree, not uncommon. (C. 487, 804).

Myristica Forbesii, King. Collected by Maingay. Not seen.

Myristica Irya, Gærtn. ; large spreading tree 60-70 ft. high. South of the Island, not common. (C. 936).

Myristica oblongifolia, King. Not seen.

Myristica Scortechinii, King ; Government Hill (C. 2769).

Myristica intermedia, Bl. ; medium sized tree. West Hill 1500 ft. (C. 1044).

Myristica furfuracea, Hook. fil. ; Government Hill 2000 feet. (C. 1459).

Myristica furfuracea var. *major*, King. (C. 1459, 2456).

Myristica laurina, Bl. ; small tree. West Hill, not uncommon. (C. 1191, 2457).

Myristica glauca, Bl. (C. 935).

Myristica Missionis, Wall. ; tree 20-30 feet. Pulau Betong. (C. 700, 935).

Myristica glaucescens, Hook fil. ; tree 25-30 feet, common. (C. 1559).

Myristica Hookeriana, Wall.; a tall but not very large tree. Government Hill. (C. 202).

Myristica Curtisii, King; a tree with slender branches. Waterfall. (C. 1024, 1301).

Myristica racemosa, King; tree 40-50 feet high. Nalm pass, rare. (C. 934).

Myristica Ridleyana, King; tree 40-50 feet high. Government Hill. (C. 2458.)?

Myristica eugeniæfolia, A. D. C. is said to have been collected in Penang. Not identified. It is little known plant and probably identical with one of the preceding.

MONIMIACEÆ.

Kibara coriacea, Endl.; small tree 20 feet. Government Hill, not common. (C. 1242, 2255).

LAURINEÆ.

Apollonias sp.; tree 40-50 feet. Penara Bukit. (C. 1098).

Beilschmiedia sp.; large tree; fruit ovate, 1 inch long. Government Hill 2000 feet, rare. (C. 1015).

Dehaasia Kurzii, King? compact growing tree. West Hill. (C. 1193).

Dehaasia sp.; tree 30-40 feet; fruit with fleshy red pedicel ¾ inch long. Government Hill. (C. 1183).

Endiandra sp.; tall tree, branches slender; fruit oblong, 1¼ inches. Moniot Road. (C. 1230).

Ediandra, sp.; tree 40-50 feet high, fruit 2 in. long black-purple. Batu Feringy. (C. 3068).

Endiandra, tree 30-40 tall, leaves obovate 7 x 4 in. fruit oblong dark purple. Pantie Achie. (C. 3067).

Micropora Curtisii, Hook. fil; tree 40 feet leafy. Government Hill 1000-2000 feet. (C. 524, 1214).

Cinnamomum javanicum, Bl. very doubtful, some leaves collected by Walker are the only authority for this here.

Cinnamomum iners, Reinw.; tree medium-size, very common. (C. 156).

Cinnamomum nitidum, Bl.; recorded hence in Flor. Brit. Ind. is an error. No. 2583*a* Wall. Cat. is *C. iners* Reinw. and was collected in Penang. No. 2583 B.C.D. which are referred to *C. nitidm* were not from Penang.

Cinnamomum vimineum, Nees; small tree; leaves when bruised emit a strong aromatic scent. Government and West Hills. (C. 1571).

Cinnamomum mollissimum, Hook fil; small tree 20-25 feet. West Hill 2500 feet. (C. 308).

Cinnamomum Parthenoxylon, Meissn. "Medang"; large tree, timber valuable. (C. 512, 1038).

Cinnamomum Lampongum, Miq; Medium-sized tree. (C. 2252).

Machilus rimosa, Bl.; large spreading tree. Penara Bukit, not uncommon. (C. 942, 1030).

Phœbe opaca, Bl. Not seen. Collected by Porter.

Phœle multiflora, Bl.; large tree. Pulau Betong. (C. 2739).

Alseodaphne peduncularis, Hook. fil. Not identified, Wallich 2596.

Alseodaphne sp.; middling sized tree. Waterfall. (C. 1536).

Actinodaphne magrophylla, Nees; tree 30-40 feet. Waterfall and Pulau Betong. (C. 2304, 2473).

Actinodaphne pruinosa, Nees; tree 40-50 feet. Moniot's Road, rare. (C. 1020).

Litsæa sebifera, Pers.; tree 20-30 feet. West Hill. (C. 2305).

Litsæa sp.; near *sebifera*, but with fasciculate not racemose inflorescence. (C. 1182).

Litsæa sessiliflora, Hook fil; large shrub. Government Hill. (C. 649).

Litsæa grandis, Wall.; tree 40-50 feet. Top of Government Hill. (C. 1104).

Litsæa polyantha, Juss.; small tree. Government Hill 2500 feet. (C. 283).

Litsæa amara, Bl. Not identified. Maingay.

Litsæa salicifolia, Rox.; small tree. Batu Hitam. (C. 787).

Litsæa læta, Wall.; small tree. Moniot's Road. (C. 2159).

Litsæa penangiana, Hook. fil; small tree. (C. 1587)?

Litsæa myristicifolia, Wall.; tree 30-40 feet. (C. 769, 1079).

Litsæa nitida, Bl.; tree 40 feet. Moniot's Road. (C. 795).

Litsæa zeylanica, C. & Fr. small tree. Tanjong Bunga, &c., common. (C. 468, 446).

Litsæa rugosa, Kurz; Not identified. an obscure plant probably not a Litsea at all.

Litsæa Noronhiana, Bl.; large tree 50-60 feet. Government Hill. 1200 feet. (C. 2449).

Litsæa sp.; tree 30-40 feet. Top of Government Hill. (C. 1103).

Litsæa sp.; small tree; fruit the size of a pea. (C. 733, 1073).

Lindera oxyphylla, Benth. Not identified. Porter. (Wall. cat. 2547).

Cassytha filiformis, L.; twiner, common on rocks and low bushes near the coast. (C. 1203).

PROTEACEÆ.

Helicia attenuata, Bl.; small tree. Telok Bahang. (C. 1181).

Helicia, sp.; small tree quite distinct from *H. attenuata*. Penara Bukit. (C. 3020).

Helicia petiolaris, Bennett; not seen. Formerly cultivated in Penang according to Jack. It is not rare in Singapore.

THYMELEACEÆ.

Wikstrœmia indica, C. A. Mey., small shrub. Open places, often in Nutmeg plantations. (C. 30).

Linostoma pauciflorum, Griff.; climbing shrub. Muka Head. (C. 713).

Aquilaria Malaccensis, Lam.; tree 40-60 feet bark smooth, grey; flower white, scented. (C. 1534).

This tree produces the *Gaharu* Wood.

ELEAGNACEÆ.

Elæagnus latifolia, L.; large climbing shrub. Top of Government Hill. (C. 904).

LORANTHACEÆ.

Loranthus Lobbii, Hook fil. Government Hill. (C. 85, 389).

Loranthus pulcher, D. C. (C. 394).

Loranthus pentapetalus, Roxb. Government Hill and Penara Bukit, common. (C. 205).

Loranthus coccineus, Jack; Government Hill. (C. 243.

Loranthus ferrugineus, Rox. Government Hill; common. (C.).

Loranthus pentandrus, L. Ayer Hitam. (C. 476).

Loranthus ampullaceus, Rox. Government Hill. (C. 66).

Loranthus globosus, Rox. Not identified. Apparently only differs from the preceding in having fleshier narrower leaves and globose fruit, but *L. ampullaceus* is very variable in the form of the leaf.

Loranthus albidus, Bl. Government Hill and Penara Bukit, not uncommon. (C. 1113).

Viscum ovalifolium, Wall. Not seen.

Viscum articulatum, Burm. Government Hill. (C.).

Notothixos malayanus, Oliv.; parasitic, much branched shrub; fruit white. Coast. (C. 233).

SANTALACEÆ.

Henslowia lobbiana, A. D. C.; long twining shrub. Government Hill, common. (C. 21).

Henslowia buxifolia, Bl.; parasitic on the roots of trees in damp shady places. (C. 477).

Champereia Griffithiana, Bl.; small tree. Telok Bahang, not common. (C. 155, 1163, 2262).

EUPHORBIACEÆ.

Euphoria atoto, Forst.; shrubby 1-3 ft. Open sandy places near the coast. (C. 333, 1883).

Euphorbia pilulifera, L.; erect annual herb 1-2 ft. (C. 1838).

Euphorbia thymifolia, Burm.; much branched prostrate herb. Government Hill. (C. 1945).

Euphorbia, sp. near *neriifolia*, L.; erect shrub, 2-5 ft. Common at the Waterfall. (C. 1567).

Bridelia stipularis, Bl. Not identified. Collected by Wallich. (C. 7878 N).

Bridelia tomentosa, Bl.; small tree. Common. (C. 112).

Bridelia penangiana, Hook. fil.; small tree Government Hill. (C. 527).

Bridelia rufa, Hook. fil.; small tree. Waterfall. (C. 1480).

Bridelia Curtisii, Hook. fil.; large shrub. Telok Bahang. (C. 97).

Cleistanthus hirsutulus, Hook. fil.; small tree. Waterfall. (C. 1464).

Cleistanthus membranaceus, Hook. fil. (C. 1481).

Cleistanthus nitidus, Hk. f.; small tree, Government Hill. (C. 146).

Cleistanthus pedicellatus, Hook. fil.; small compact tree. Government Hill, rare. (C. 169).

Actephila excelsa var. javanica, Miq.; shrub, not common. (C. 674).

Phyllanthus emblica, L. "Buah Malakka;" spreading tree. Not common. (C.).

Phyllanthus frondosa, Wall.; shrub 3-5 ft.; fruit the size of a pea. Batu Feringgi. (C. 819, 1263).

Phyllanthus Kunstlerii, Hook. fil. Penang at 800-1000 feet, Kunstler. Not seen.

Phyllanthus urinaria, L. Not seen.

Phyllanthus niruri, L.; herb 6-18 in. Common. (C. 1841).

Phyllanthus acutus, Wall. Collected by Finlayson (Wall. Cat. No. 7931) was probably not from Penang at all.

Phyllanthus pulcher, Wall.; shrub 2-4 ft.; common near villages, doubtfully wild. (C. 78).

Phyllanthus distichus, Muell. Arg. Cultivated.

Glochidion insulare, Hook. fil.; small tree. Government Hill. (C. 1728).

Glochidion hirsutum, Muell. Arg. Not identified.

Glochidion macrostigma, Hook. fil. Penara Bukit. (C. 852).

Glochidion Wallichianum, Muell. Arg. Not identified. Wallich 7873).

Glochidion obscurum, Bl.; tree 30-40 feet. Waterfall, common. (C. 46).

Glochidion nanogynum, Hook. fil. Not identified. Wallich 8003 B.

Glochidion desmocarpum, Hook. fil. Not identified. Penang, herb. Hooker perhaps from elsewhere.

Glochidion lævigatum, Hook. fil; small tree. (C. 833, 1593).

Glochidion superbum, Baill.; small tree, common. (C. 111).

Glochidion coronatum, Hook. fil. ; large shrub sometimes a tree. (C. 213).

Glochidion Curtisii, Hook. fil ; large shrub. Government Hill. (C. 670).

Glochidion perakense, Hook. fil; shrub. West Hill. (C. 1120).

Breynia discigera, Muell. Arg. ; large shrub. West Hill. (C. 196).

Breynea coronata, Hook. fil ; large shrub or small tree ; common. (C.).

Sauropus albicans, Bl. ; small undershrub. West Hill. (C. 963).

Cyclostemon longifolius, Bl. ; tall tree. Government Hill.

Cyclostemon Curtisii, Hook. fil ; small tree. Government Hill. (C.).

Cyclostemon sp. ; small tree 12-15 feet. Waterfall. (C. 1776).

Choriophyllum malayanum, Benth. ; tree 40 feet or more. Government Hill, &c. ; common. C. 1148, 881, 1198).

Aporosa ficifolia, Baill. ; small tree. West Hill. (C. 1483, 1583).

Aporosa nigricans, Hook. fil ; large shrub. West Hill. (C. 1570, 1574).

Aporosa microsphæra, Hook. fil ; small tree. (C. 1482, 1466, 1470, 1467).

Aporosa aurea, Hook. fil ; large shrub. Waterfall. (C. 1460).

Aporosa lunata, Benth ; tree 20-30 feet. Moniots Road. (C. 1468).

Aporosa Benthamiana, Hook. fil ; small tree 25-30 feet. (C. 1469).

Aporosa stellifera, Hook. fil ; small tree. Penara Bukit. (C. 1472).

Aporosa Prainana, King mss. ; small tree. Waterfall and Government Hill. (C. 1476, 1477).

Antidesma pachystachys, Hook. fil. Not identified. Wallich 8569.

Antidesma velutinosum, Bl. ; large shrub or small tree. Government Hill. (C. 672).

Antidesma velutinosum, var. *lancifolia ;* shrub 6-10 feet. (C. 863).

Antidesma Ghæsembilla, Gærtn. ; low spreading tree. Waterfall, &c. Common. (C. 782-1554).

Antidesma leucocladon, Hk. f ; shrub 5-6 feet high ; ripe fruit black, smooth fleshy. (C. 2280).

Antidesma Bunius, Spreng. Moniot's Road 2278.

Antidesma fallax, Muell. Arg. ; tree 30-40 feet. Penara Bukit. (C. 1473, 984 ?).

Antidesma Moritzii, Muell Arg. small tree. Tanjong Bonga. (C. 230).

Antidesma sp. ; small tree. Telok Bahang. (C. 1150).

Baccaurea parviflora, Muell. Arg. ; small tree, common. (C. 166, 1169).

Baccaurea macrophylla, Muell. Arg. Not identified. Penang. Phillips.

Baccaurea Griffithii, Hook. fil. ; tree 30-40 feet. Waterfall. (C. 1474).

Baccaurea brevipes, Hook. fil. ; small tree, not uncommon. (C. 1568, 1478).

Baccaurea Wallichii, Hook. fil. Not identified. Wallich 8073.

Baccaurea, sp. A. of Fl. Brit. Ind. ; tree 30-40 feet ; bark almost black. Government Hill. (C. 1463).

Baccaurea, sp. tree 20-30 feet high ; berries white, globular, pubescent. (C. 3021).

Galearia fulva, Muell. Arg. Not identified. Wallich 8585C. Phillips.

Galearia pedicellata, Br. Not identified. Wallich 8585. Philips.

Galearia Jackiana, Br. Not identified. Penang, Jack.

Galearia subulata, Muell. Arg. In Sonder's herbarium from Lindley's herbarium. Not identified, probably from elsewhere.

Galearia Lindleyana, Muell. Arg. shrub. West Hill. (C. 176).

Microdesmis caseariæfolia, Pl. ; erect shrub 4-6 feet. Waterfall. (C. 1491).

Microdesmis sp. small shrub. Waterfall. (C. 1489).

Aleurites moluccana, Willd. ; tree 30-40 feet or more. Not seen in any place where it might not easily have been introduced. (C. 1210).

Croton argyratus, Bl. ; small tree 20-25 ft., common. (C. 232).

Trignostemon longifolins, Baill. ; shrub 8-10 ft. Waterfall. (C. 1475).

Trigonostemon indicus, Muell. Arg. ; small tree 15-25 ft. ; back smooth, grey. Government Hill. (C. 218).

Ostodes muricata, Hook. fil. ; shrub 6-10 ft. Waterfall. (C. 1484).

Dimorphocalyx malayanus, Hook. fil. ; tree 20-25 feet ; flower white, conspicuous. Waterfall. (C. 806).

Dimorphocalyx Kunstlerii, King ; small tree. Waterfall. (C. 1517).

Erismanthus obliqua, Wall. ; small tree. 25 ft. Waterfall, common. (C. 1471).

Agrostistachys Gaudichaudi, Muell. Arg. collected by Gaudichaud. Not identified.

Agrostistachys longifolia, Benth. var. *malayana*. Not identified. Wallich.

Claoxylon indicum, Hassk. ; small tree. Pulau Betong. (C. 897).

Claoxylon longifolium; Muell. Arg. ; small tree. (C. 675).

Claoxylon longifolium var. brachystachys. (C. 1101).

Claoxylon Wallichianum, Muell. Arg. ; shrub. Government Hill. (C. 644).

Acalypha indica, L. ; annual herb, common. (C. 891, 2147).

Cœlodepas Wallichianum, Benth. ; small tree with very hard wood. Penara Bukit. (C. 1271).

Alchornea villosa, Muell. Arg., var. *glabrata ;* tall shrub. Government Hill. (C. 214).

Alchornia discolor, Hook. fil. ; shrub. Government Hill. (C. 822).

Cœlodiscus montanus, Muell. Arg. ; shrub. Penara Bukit. (C. 1261).

Mallotus barbatus, Muell. Arg. Not identified. Wallich 7822.

Mallotus cochinchinensis, Lour. ; small tree ; common. (C. 43).

Mallotus Porterianus, Muell. Arg. ; large shrub or small tree. (C. 1461, 1462).

Mallotus Griffithianus, Hook. fil. ; tree 25-30 feet. Waterfall and Government Hill. (C. 2260-2286).

Mallotus lancifolius, Hook. fil. ; shrub 8-10 feet. Government Hill 2,000-2500 feet. (C. 684).

Mallotus sub-peltatus, Muell. Arg. Government Hill. (C. 1557).

Mallotus penangensis, Muell. Arg. Government Hill. (C.755).

Mallotus repandus, Muell. Arg. Not seen.

Cleidon javanicum, Bl. ; not seen.

Macaranga pustulata, King ; small tree Government Hill. (C.).

Macaranga Tanarius, Muell. Arg. ; spreading tree 30-40 feet. Pulau Butong, not common. (C. 1949).

Macaranga Curtisii, Hook. fil. ; medium-sized tree. West Hill. (C. 286).

Macaranga hypoleuca, Muell. Arg. ; small straight tree 25-30 feet. Government Hill. (C).

Macaranga megalophylla, Muell. Arg. ; tree 30-40 feet. Government Hill and Waterfall. (C. 1588).

Macaranga populifolia, Muell. Arg. ; Not identified.

Macaranga javanica, Muell. Arg. ; small tree, common. (C. 76).

Macaranga triloba, Muell. Arg. ; small tree. Government Hill. (C. 1479).

Macaranga Lowii, King ; small tree 15-20 feet. Government Hill, not uncommon. (C. 276, 799).

Endospermum malaccense, Muell. Arg. medium-sized spreading tree. Government Hill. (C. 316).

Gelonium multiflorum, A Juss. ; small tree. Pulau Betong. (C. 924).

Gelonium bifarium, Rox. ; small tree. Government Hill. (C. 53).

Gelonium glomerulatum, Hassk. ; shrub. Telok Bahang. (C. 224).

Chœtocarpus castanocarpus, Thwaites ; small tree. Waterfall Government Hill &c. ; common. (C. 725, 449, 658).

Baliospermum axillare, Bl. ; shrub. Government Hill. (C 77.)

Epiprinus malayanus, Griff. ; small tree 15-20 ft. Nalm, rare. (C. 2472).

Cnesmone javanica, Bl. "Jelatang Rusa ;" climbing shrub with stinging hairs. Government Hill. (C. 384).

Sapium baccatum, Rox. ; tree 25-30 feet. Not uncommon. (C. 836).

Sapium indicum, Willd. ; tree 30 feet. Coast. (C. 1605).

Excœcaria agallocha, L. ; tree ; common in Mangrove swamps. (C. 11, 1026).

Excœcaria quadrangularis, Muell. Arg. ; shrub 2-4 feet. Waterfall and Pulau Betong. (C. 989).

Sebastiana chamælea, Muell. Waterfall-gardens in grass plots.

URTICACEÆ.

Trema timorensis, Bl. ; small tree ; branches slender. Bagian Jermal, rare. (C. 1935).

Trema angustifolia, Bl. ; small tree ; branches rigid. (C. 1893).

Trema amboinensis, Bl. ; tree 20-30 feet ; very quick growing. Common. (C. 102, 268).

Gironniera nervosa, Pl. ; medium-sized tree, 30-40 feet. Government Hill, rare. (C. 192).

Gironniera subœqualis, Pl. ; tree 30-40 feet. Telok Bahang, rare. (C. 1074).

Gironniera parvifolia, Pl. ; tree 20-30 feet. Government Hill, common. (C. 529, 1506).

Phyllochlamys Wallichii, King ; thorny shrub 6-10 feet. Waterfall, not uncommon. (C. 174).

Streblus asper, Lour. Not seen.

Sloetia Sideroxylon, Teysm and Binnend. "Tampinis ;" tree medium size, wood durable, in great demand. (C. 198).

Sloetia penangiana, Oliv. "Tampinis daun besar ;" tree, branches less rigid and leaves larger than the preceeding. (C. 380).

Sloetia Wallichii, King ; not identified. Wallich No. 9090.

Ficus pisifera, Wall. ; small tree. Sungei Penang. (C. 1132).

Ficus gibbosa, Bl. ; small tree. Coast. (C. 948).

Ficus parietalis, Bl. ; Not identified.

Ficus pilosa, Reinw. Not identified. Very doubtful.

Ficus bracteata, Wall. Not seen.

Ficus globosa, Bl. (C. 2508).

Ficus xylophylla, Wall. Government Hill 2500 feet (C. 2216).

Ficus rigida, Miq.; is common. (C.).

Ficus dubia, Wall.; tree 30-40 feet. Penara Bukit. (C. 1128).

Ficus glabella, Bl.; small tree. Tanjong Bunga. (C. 1126).

Ficus retusa, L. Not seen.

Ficus vasculosa, Wall.; tree Penara Bukit. (C. 1133).

Ficus punctata, Thunb. Not seen. Wallich.

Ficus rostrata, Lamk. Penara Bukit, common. (C. 1124, 1127).

Ficus hispida, L. f.; small tree 15-20 feet, common. (C.).

Ficus Miquelii, King; tree. Waterfall. (C. 1749, 1889)

Ficus Ribes, Reinw. Not identified.

Ficus fistulosa, Reinw. Not identified.

Ficus lepicarpa, Bl.; small tree. Waterfall. (C. 1130).

Ficus recurva, Bl.; creeping shrub. (C. 171, 1131).

Ficus annulata, Bl. Sungei Penang. (C. 2509).

Ficus Curtisii, King. A large tree. Glugor and Telok Bahang. (C. 1982).

Ficus villosa, Bl.; woody creeper; generally on rocks. West Hill, &c., common. (C. 173).

Ficus diversifolia, Bl.; small erect shrub 2-6 feet; not uncommon. (C. 873).

Ficus alba, Reinw.; small tree 10-12 feet, common. (C. 1129).

Ficus chrysocarpa, Reinw. Not seen. Wallich.

Ficus glandulifera, Wall.; small tree; not uncommon up to 2500 feet. (C. 1134).

Ficus variegata, Bl. Not seen. King's collector.

Ficus chartacea, Wall. var. *torulosa*. (C. 1711).

Artocarpus rigida, Bl. "Tamponey"; large tree, sometimes cultivated for its fruit. (C. 1984).

Artocarpus integrifolia, L.; The Jack, cultivated in almost every vilage, often found in a half-wild state. (C.).

Artocarpus polyphema, Persoon. The Champedak. Cultivated.

Artocarpus lanceæfolia, Rox. "Nangka pipit"; tree. Penara Bukit. (C.).

Artocarpus chaplasha, Rox. Government Hill. (C.).

Artocarpus Lakoocha, Rox.: tree 30-40 feet, deciduous. Government Hill 2,000 feet. (C. 1222, 906, 1251).

Artocarpus Gomeziana, Wall. var. *Griffithii*, King. "Tampong"; compact leafy tree 30-40 feet. (C. 657).

Balanostreblus ilicifolia, Kurz. Not identified. On Penang Island. King's collector.

Conocephalus suaveolens, Bl. "Ara jankang"; large climbing shrub, Pulau Betong. (C. 1745).

Conocephalus amœnus, King; large climber. Pulau Betong. (C. 1980).

Conocephalus Scortechinii, King. Government Hill. (C.).

Conocephalus subtrinervius, Miq. Penara Bukit, by the side of streams. (C. 1009).

Fleurya interrupta, Gaud.; annual herb 1-2 feet; common in waste places. (C. 915).

Laportea sp.; shrub 6-10 feet. Wang Seraya and Nalm Pass, not common. (C. 1100).

Pilea muscosa, L. Abundant at the Waterfall. (C. 1233).

Pellionia javanica, Wedd.; dwarf herb. Balik Pulau. (C. 682).

Pellionia acaulis, Hook. fil. Not indentified. On damp rocks, King's collector.

Elatostema sessile, Forst.; herb 12-18 inches. Damp shady places, Balik Pulau. (C. 922).

Elatostema molle, Wedd. Not indentified. Phillips.

Procris frutescens, Bl.; stem woody 1-2 feet. Government Hill. (C. 486).

Pouzolzia indica, Gaud.; prostrate herb. (C. 1938, 2145).

Pouzolzia pentandra, Benn.; 2-3 feet, common. (C. 1879).

Pipturus mollissimus, Wedd.; large climbing shrub, Penara Bukit. (C. 673, 1032).

JUGLANDEÆ.

Engelhardtia Wallichiana, Lindl. ; medium-sized tree. Government Hill 2000-2500 feet. (C. 56).

Engelhardtia serrata, Bl. ; tree 30-40 feet. Muka Head. (C. 1716).

Engelhardtia nudiflora, Hook. fil. Not seen. Government Hill. Maingay.

MYRICACEÆ.

Myrica sp. ; middling sized tree. West Hill 2500 feet. C. (903).

CASUARINEÆ.

Casuarina equisetifolia, Forst. "Kayu Ru." Cultivated ; indigenous. (C.).

CUPULIFERÆ.

Quercus oidocarpa, Korth. "Berangan Babi" ; large tree. Telok Bahang, rare. (C. 434).

Quercus Wallichiana, Lindl. ; medium-sized tree, 20-40 feet. Government Hill, common. (C. 252, 253).

Quercus sundaica, Bl. ; low spreading tree. Government Hill 2000 feet, rare. (C. 367, 442).

Quercus Curtisii, King ; medium-sized tall tree. Waterfall. (C. 1253).

Quercus Wenzigiana, King ; tree 20-30 feet. Government Hill 2,000 feet. (C. 360, 368).

Quercus Rassa, Miq. ; tree branches slender, drooping. Government Hill 2000 feet. (C. 362, 363, 255).

Quercus lucida, Rox. ; tall tree, not very large. West Hill 2500 feet. (C. 436, 930).

Quercus Omalkos, Korth. ; tall tree. Government Hill 2000 feet, rare. (C. 435).

Quercus cyclophora, Endl. ; large tree, not uncommon. Government Hill 1000-2000 feet (C. 361).

Quercus discocarpa, Hance ; tree about 25 feet. Top of Government Hill. (C. 1155).

Quercus encleisocarpa, Korth. ; small tree. Government Hill 1000 feet. (C. 254).

Quercus Maingayii, Benth.; large tree. Government Hill and Bukit Laksamana, rare. (C. 267).

Quercus sp. (*nitida*, Bl.?); small tree. West Hill 2500 feet. (C. 366).

Castanopsis javanica, A.D.C.; large tree. Government Hill. 1000 feet. (C. 419).

Castanopsis sumatrana, A.D.C.; medium-sized tree. Waterfall. (C. 1563).

Castanopsis Wallichii, King; tree tall, not large. Government Hill 1000 feet. (C. 416).

Castanopsis Curtisii, King; medium-sized tree. Penara Bukit, rare; only one tree seen. (C. 1691).

SALICICNEÆ.

Salix tetrasperma, Rox.; tree 20-30 feet; not uncommon in damp places. (C. 698).

GNETACEÆ.

Gnetum Gnemon, L. "Buah Maningo"; erect pyramidal tree 30-40 feet, cultivated for its fruit. (C. 856).

Gnetum Brunonianum, Griff.; erect shrub 3-5 feet; fruit smaller than G. Gnemon. (C. 878).

Gnetum neglectum, Bl.; extensive climber completely covering low trees; common. (C. 877).

Gnetum macrostachyum, Hook. fil; large climber; stem 2-3 inches diam. Government Hill 2000-25000 feet. (C. 1109).

CONIFERÆ.

Dacrydium elatum, Wall.; large tree. Government Hill; common. (C.).

Podocarpus neriifolia. Don; tree 30 feet or more Government Hill. (C.).

Podocarpus cupressina, Br.; small graceful tree. (C.).

Agathis loranthifolia, Salis.; tree 60-100 feet with a straight clean stem, common. (C.).

HYDROCHARIDEÆ.

Blyxa malayana, Ridl.; aquatic herb. Telok Bahang, common. (C. 1888).

Ottelia alismoides, Pers.; aquatic herb. Common in ditches near the town. (C. 851).

BURMANNIACEÆ.

Burmannia cœlestis, Don. Not uncommon in open grassy places. (C.).

ORCHIDEÆ.

Microstylis congesta, Reich. f. Pulau Betong 500 feet, rare. (C.).

Microstylis Maingayii, Hook. fil. Bukit Laksamana 1800 feet; not common. (C. 1005).

Oberonia anceps, Lindl. Waterfall. (C.).

Liparis elegans, Lindl. Moniot's Road on rocks, not uncommon. (C. 507).

Liparis longipes, Lindl. (C.).

Dendrobium pumilum, Rox. Near the Coast. (C.).

Dendrobium lonchophyllum, Hook. fil. Government Hill 2,000 feet. (C.).

Dendrobium serra, Lindl. Collected by Porter and Maingay.

Dendrobium grande, Hook. fil. A figure in Kew Herbarium is the only record for this plant here.

Dendrobium Leonis, Rchb. fil. On mangosteen trees. (C.).

Dendrobium sinuatum, Lindl. Obtained by Maingay.

Dendrobium subulatum, Hook. fil. Western Road, growing on the shade trees. (C. 2408).

Dendrobium villosulum, Wall. Collected by Porter.

Dendrobium crumenatum, Swartz. Pigeon-orchid. Common on coco-nut trees; the most abundant of any Orchid. (C.).

Dendrobium secundum, Wall. Not common. (C.).

Dendrobium sanguinolentum, Lindl. Government Hill 2000 feet. (C.).

Dendrobium bifarium, Lindl. Government Hill 2000 feet. (C.).

Bulbophyllum pileatum, Lindl. Government Hill. (C. 1141).

Bulbophyllum Medusæ, Rchb. fil. Government Hill. (C.).

Bulbophyllum capitatum, Lindl. Government Hill on *Dacrydium elatum*, not uncommon. (C. 2883).

Bulbophyllum leptosepalum, Hook. fil. Government Hill. (C. 415).

Bulbophyllum bisetosum, Lindl. Telok Tikus, rare. (C. 1979).

Cirrhopetalum vaginatum, Lindl. West Hill. (C. 355, 1777).

Cirrhopetalum concinnum, Hook. fil. var. Top of Government Hill.

Cirrhopetalum longescapum, Teysm. Penang, Lobb. The specimen in the Buitenzorg Herbarium consists only of a portion of a stout scape without flowers or leaves. The plant has not since been seen.

Eria Maingayii, Hook. fil. Government Hill. Maingay.

Eria nutans, Lindl. Government Hill 2000 feet. (C.).

Eria neglecta, Ridl. Government Hill. (C.).

Eria pulchella, Lindl. On rocks near the coast. (C. 1735).

Eria pellipes, Rchb. fil. Maingay.

Eira ferox, Bl. Lobb. Maingay.

Eria oligantha, Hook. fil. Government Hill.

Eira velutina, G. Loddiges, Government Hill. (C. 1696).

Eira leiophylla, Lindl. Government Hill. (C. 1,139, 1,240).

Claderia viridiflora, Hook. West Hill. (Government Hill 2,000 feet).

Spathoglottis plicata, Bl. Common from sea level up to 2,000 feet. (G. 72).

Tainia penangiana, Hook. fil. Government Hill. (C.).

Tainia Maingayii, Hook. fil. Maingay.

Agrostophyllum majus, Hook. fil. Government Hill 2,000-2,500 feet, on tall trees. (C.).

Cœlogyne macrobulbon, Hook. fil. Wallich 1969-2.

Cœlogyne tomentosa, Lindl. Government Hill. (C.).

Cœlogyne tomentosa var. *penangensis*. Maingay.

Cœlogyne Cumingi, Lindl. West Hill. (C.).

Cœlogyne speciosa, Lindl. Government Hill 2,000 feet. (C.).

Calanthe curculigoides, Wall. Government and West Hill 2,000-2,500 feet, common. (C.).

Eulophia squalida, Lindl. Government Hill. (C. 1064).

Cymbidium Finlaysonianum, Lindl. Common on trees and rocks on the sea coast. (C. 353).

Geodorum purpureum, var. Telok Bahang, rare. (C. 354).

Geodorum citrinum, Jackson. Drawing in Kew Herbarium.

Grammatohyllum speciosum, Bl. Not common. (C.).

Bromheadia palustris, Lindl. Common on sloping banks of red soil up to 2,500 feet. (C. 359).

Polystachya penangensis, Ridl. Government Hill 1,800 feet. (C. 1006).

Luisia tristis, Hook. fil. Penara Bukit, on Durian trees. (C. 1176).

Sarcochilus trichoglottis, Hook. fil. Orchards, on Mangosteen trees. (C.).

Sarcochilus (*Cuculla*) *lilacinus*, Griff. Telock Bahang, among long grass. (C.).

Sarcochilus (*Cuculla*) *brachystachys*, Hook. fil. Maingay.

Sarcochilus (*Cuculla*) *arachnites*, Reich. fil. Telok Bahang, on trees by the river. (C.).

Ærides suavissimum, Lindl. A very rare plant in Penang. I have collected it on two occasions only. (C.).

Renanthera elongata, Lindl. Ayer Hitam, rare. (C. 485).

(*Saccolabium penangianum*, Hook. fil.; is not a Penang plant. Sungkei River where my specimens were collected is in Perak. Fl. B. I. Vol. VI p. 57).

Saccolabium tenuicaule, Hook. fil. Waterfall and West Hill. (C. 994).

Saccolabium cornigerum, Ridl. ined. West Hill. (C.).

Acampe penangiana, Ridl. ined. Government Hill. (C. 1963)

Sarcanthus secundus, Griff. Near the coast. (C.).

Sarcanthus Scortechinii. Hook. fil. Coast. (C. 2310).

Cleisostoma spicatum, Lindl. Tanjong Bunga, common. (C. 1834).

Teniophyllum serrula, Hook. fil. Western Road, on shade trees. (C.).

Acriopsis indica, Wight, was collected by Maingay.

Acriopsis javanica, Reinw. Common all over the Island. (C. 2472).

Podochilus acicularis, Hook. fil. Government Hill 2,000-2,500 feet, on damp rocks, common. (C. 1733).

Appendicula callosa, Bl. Government Hill. (C. 358).

Appendicula Lewisii, Griff. West Hill 2,000 feet. (C. 993).

Appendicula Maingayii, Hook. fil. Government Hill 2,000 feet. (C. 2822).

Oxyanthera decurva, Hook. fil. Not seen. Government Hill, Maingay.

Galeola altissima, Rch. fil. Not common. (C. 352).

Galeola Hydra, Rch. fil. (C. 351).

Vanilla Griffithii, Rchb. fil. (*V. albida* Hook. fil. non Bl). Waterfall, not uncommon. (C. 2271).

Corymbis longiflora, Hook. fil. Balik Pulau, rare. (C.).

Anæctochilus brevilabris, Lindl. Telok Bahang. (C.).

Anæctochilus Reinwardtii, Bl. Government Hill. (C. 1063).

Hetæria obliqua, Bl. Pulau Betong. (C.).

Odontochilus calcaratus, Hook. fil. Government Hill 2,000 feet. (C. 2823).

Hæmaria discolor, Bl. Wallich No. 7390. (C.).

Zeuxine affinis, Benth. Government Hill.

Cryptostylis arachnites, Bl. Government Hill 2,500 feet. (C.).

Pogonia punctata, Bl. Waterfall, rare. (C.).

Habenaria lacertifera, var. *robusta*, Abundant. (C. 357).

Cypripedium barbatum, Lindl. Government Hill. (C.).

Apostasia Wallichii, Br. West Hill 2,500 feet. (C. 925).

Neuwiedia Lindleyii, Rolf. Sungei Penang. (C. 469).

Neuwiedia Curtisii, Rolf. Government Hill, rare. (C. 1186).

SCITAMINEÆ.

Globba Wallichii, Baker; herb. Government Hill. (C. 455).

Globba uliginosa, Miquel. Government Hill. King.

Globba pendula, Rox. Roxburgh.

Globba versicolor, Smith, (Fl. Brit. Ind.).

Globba sps. undetermined. (C. 956-2851).

Curcuma petiolata, Roscoe, bracts violet coloured. Common. (C. 1744).

Gastrochilus pulcherrima, Wall. Maingay.

Kæmpferia parvula, King. Government Hill 2,000 feet. Common.. (C.).

Kæmpferia rotunda, L. Government Hill. (C. 189).

Amomum sphœrocephalum, Baker. Collected by Maingay.

Amomum megalocheilos, Baker. Cooly lines Government Hill. (C. 2419).

Amomum metriocheilos, Baker. Government Hill. (C. 1530).

Amomum biflorum, Jack. No specimen of this is known to exist. Can it be an Elettariopsis?

Zingiber gracile, Jack. Waterfall. Not common. (C.).

Zingiber spectabile, Griff. (C. 1200, 1978, 2161).

Costus speciosus, Smith. Common. (C.).

Costus Kingii, Baker. Pulau Betong. (C. 1976).

Elettariopsis Curtisii, Baker. West Hill 2,500 feet. (C. 1570).

Elttariopsis serpentina, Baker. Waterfall. C. 2276).

Alpinia galanga, Sw. Penara Bukit. (C.).

Alpinia Wrayii, King. Not identified.

Alpinia mutica, Rox. Sent to the Calcutta Gardens from Penang.

Alpinia Rafflesiana, Wall. Not seen.

Phrynium parviflorum, Rox Government Hill. (C. 2420).

Canna indica, L. Common. (C.).

Canna indica, var., *flava*. Not common (C.).

Undetermined *Scitamineœ*. (C. 327, 2275, 2884).

HÆMODORACEÆ.

Peliosanthes Teta, Andr.; dwarf herb, seeds blue. Waterfall, common. (C. 139).

Peliosanthes humilis, Andrews. Maingay.

Peliosanthes albida, Baker; leaves long; fl. greenish. Government Hill 2,000 feet. (C. 753).

Peliosanthes, sp.; leaves long, fl. purple. (C. 2757).

Ophiopogon prolifera, Lindl. T. Lewis.

Ophiopogon sp. West Hill. Not *prolifera*. (C.).

AMARYLLIDEÆ.

Curculigo latifolia, Dryand. Common in dense jungle. (C.).

Crinum asiaticum, L. Common on the sea coast. (C. 1274).

TACCACEÆ.

Tacca cristata, Jack. Common at low elevations. (C. 336).

DIOSCOREACEÆ.

Dioscorea dæmonum, Rox. Climber. Muka Head. (C. 2415).

Dioscorea orbiculata, Hook. Government Hill. (C. 1900). ?

Dioscorea oppositifolia, L. climber. Government Hill. (C. 2292).

Dioscorea laurifolia, Wall. (C. 60 63). ?

Dioscorea gibbiflora, Hook. fil. Wallich 5106 B. in part.

Dioscorea bulbifera, L. ? Pulau Betong. (C. 1565. 1943).

ROXBURGHIACEÆ.

Stemona Curtisii, Hook. fil.; twining, fl. pink. Waterfall. (C. 1522).

LILIACEÆ.

Smilax myosotiflora, A. De C. Porter.

Smilax lævis, Wall.; climbing shrub. Government Hill. (C. 1172).

Smilax extensa, Wall. Moniot's Road. (C. 1244).

Smilax polyacantha, Wall. Porter. Wall. Cat. 5127.

Smilax leucophylla, Bl. leaves large, glaucous beneath. Government Hill 1,000-2,000 feet. (C. 1145).

Dracæna brachystachys, Hook. fil.; small tree 10-12 feet high, 2-3 in. diam.; fl. white. (C. 2302).

Dracæna Porteri, Baker. Waterfall. (C. C.).

Dracæna terniflora, var. *Curtisii*, Hook. fil. Pulau Betong. (C. 901).

Dracæna gracilis, Wall.; small shrub. West Hill 2,500 feet. (C. 1186).

Dracæna Cantleyi, Baker; a large tree; fruit bright red the size of a cherry. Not common. (C.).

Dracæna, sp.; shrubby; panicle branched, 6-10 in. long. (C. 2269).

Dracæna Jackiana, Wall. cat. 5145. A. B. Collected by Porter.

Dianelia ensifolia, Redoute. West Hill 2,000 feet. (C. 1701).

Gloriosa superba, L. Not common in Penang. (C.).

PONTEDERIACEÆ.

Monochoria hastæfolia, Presl; herb. Ditches. (C.).

Monochoria vaginalis, Presl; fl. blue. Common. (C. 1235).

XYRIDEÆ.

Xyris indica, L. "Jerangoo Padang." Paddy fields south of the Island. (C. 1927).

COMMELINACEÆ.

Commelina nudiflora, L.; creeping herb; fl. blue. (C. 1224).

Commelina benghalensis, L.; Common. (C. 1843).

Aneilema nudiflorum, Bl.; small herb; fl. blue; common in open damp places. (C. 1856).

Aneilema conspicuum, Kunth. Damp dense jungle. (C. 980, 1977).

Forrestia marginata, Hassk.; herb; stem creeping, rooting from the nodes. Pulau Betong. (C. 1948).

Cyanotis barbata, Don. Wallich.

Floscopa scandens, Lour. prostrate herb. Waterfall. (C.).

FLAGELLARIEÆ.

Flageliaria indica, L. "Rotan binni" Common. (C. 25).

Susum anthelminticum, Bl. Government Hill 2,000 feet. C. 335).

PALMEÆ.

Areca catechu, L. "Pinang." Cultivated and common on abandoned land. (C.).

Pinanga polymorpha, Becc.; stem 2-3 feet. (C.).

Pinanga disticha, Bl.; stem 2-6 feet. Pantie Achie. (C. 391).

Pinanga subruminata, Becc. about 1,500-2,000 King.

Pinanga malaiana, Scheff.; stem 8-12 feet. (C.).

Oncosperma horrida, (Griff) "Nibong." Common. (C.).

Iguanura Wallichiana, Hook. fil. Collected by Porter.

Arenga saccharifera Labill. Common. (C.).

Arenga obtusifolia, Mart. Waterfall Hill.

Caryota mitis, Lour.; stem 15-25 feet. One of the commonest palms in the Island. C. 2149).

Nipa fruticans, Wurmb. Common in tidal swamps. (C.).

Phœnix paludosa, Rox.; stem 10-25 feet. Swamps. (C.).

Licuala spinosa, Wurmb. (C.).

Licuala acutifida, Mart. Common. (C.).

Livistona cochinchinensis, Mart. (Lewis.).

Calamus Draco, Griff. Penang. Lewis.

Calamus javensis, Bl. West Hill. (C. 2268).

Calamus javensis subvar. purpurascens, Becc. Not identified.

Calamus javensis subvar. penangiana, Becc. Not identified.

Calamus melanacanthus, Mart. Penang according to Martius.

Calamus martianus, Becc. Penang, Gaudichaud.

Calamus verticillaris, Griff. (C. 2222. ? 2232. ?)

Calamus hystrix, Griff. Government Hill.

Calamus geniculatus, Griff. (C. 712, 1476. ?)

Calamus viminalis, Willd. Wallich.

Calamus Lewisianus, Griff. "Kichum" Penang. Lewis.

Calamus monticolus, Griff. Penang Hill half way up. Lewis.

Zalacca affinis, Griff.; leaves 12-15 feet; fruit pear shaped densely bristly. (C. 2435).

Zalacca glabrescens, Griff.; leaves 15-20 feet. Government Hill in damp shady jungle. (C.).

Zalacca edulis, Reinw. "Salak Kumbar" sent by Lewis to Griffith. (I do not think this is wild anywhere in the Malay Peninsula).

Zalacca Wallichiana, Griff.; is said to occur in Penang. Not seen.

Zalacca conferta, Griff. Not seen. Lewis sent it to Griffith under the name of Asam Kumbar.

Plectocomia elongata, Bl.; an immense climber. Government Hill 2,000-2,500 feet. (C. 2436).

Engessonia triste, Griff.; "Bertam;" stemless; leaves 15-20 feet. The most common of all the palms. (C. 2218).

PANDANEÆ.

Pandanus, sp.; stem 3-5 feet high; fruit about 2½ in. (C. 1821).

Pandanus, sp. several undetermined.

Pandanus helicopus, Miq. 6-10 feet high; fruit 4-5 in long. West Hill 2,500 feet. (C. 2272).

Freycinetia angustifolia, Bl.; stem slender. Court. (C. 1171).

Freycinetia scandens, Gaud.? Government Hill. Resembles *F. insignis* but has narrower leaves and bracts not red.

ARACEÆ.

Cryptocoryne ciliata, Fischer, Common in tidal swamps. (C. 1940).

Arisœma cuspidatum? Waterfall. (C. 1882).

Arisœma filiforme, Bl. Waterfall, not common. (C.).

Arsiœma Kunstleri, Hook. fil.; spathe green. Waterfall. (C. 2887).

Arisœma Scortechinii, Hook. fil. Government Hill 2,000 feet. (C. 143).

Arisœma Roxburghii, Kunth. is said to have been collected by Curtis on Government Hill in Flor. Brit. Ind.

Typhonium Roxburghii, Schott. Common in open spots. (C. 1858).

Typhonium Motleyanum, Schott. Pulau Tikus. (C. 2888).

Amorphophallus campanulatus, Bl. Common. (C.).

Amorphophallus Prainii, Hook. fil. Waterfall. (C.).

Pothos Curtisii, King. Batu Feringgi. (C. 808).

Pothos, sp. West Hill. Only one specimen collected. (C.).

Lasia heterophylla, Endl. Tidal swamps, common. (C. 1941).

Homalomena angustifolium, Hook. fil. Telok Bahang on stones in mid-stream, common. (C. 2886).

Homalomena, ovatum, Hook. fil. Wallich Waterfall. (C. 1884).

Homalomena humilis, Hook. fil. Government Hill.

Homalomena sagittifolia, Jung. Waterfall, common. (C. 1857).

Homalomena aromatica, Schott. Moniot's Road.

Homalomena Miqueliana, Schott; stem 2-3 ft. high. (C. 1881).

Homalomena obliquata, Hook. fil. Collected by Phillips.

Schismatoglottis longipes, Miq. Waterfall, damp ravines (2828).

Amydrium humile, Schott. Government Hill 2,500 ft. (C. 1855).

Raphidophora, sp. Batu Feringgi. (C. 1923).

Epipremnum giganteum, Schott. Collected by Roxburgh.

Epipremnum Maingayii, Pulau Betong. (C. 2885).

Epipremnum humile, Scott. Government Hill 2,500 feet. (C. 1855).

Epipremnum mirabile, Scott. Penang. Roxburgh not seen.

Anadendrum montanum, Scott. Collected by Wallich.

Anadendrum marginatum, Schott. Collected by Porter.

Aglaonema nitidum, Kth. was collected here by Jack.

Aglaonema simplex, Bl. (C. 1721).

Colocasia antiquorum, L. Pulau Betong. (C. 1933).

ERIOCAULONEÆ.

Eriocaulon Wallichianum, Common.

CYPERACEÆ.

Cyperus polystachyus, Rottbl. Waterfall. (C. 1784, 1864). var *laxiflorus*, Benth. (C. 1862).

Cyperus pumilus, L. Dato Kramat. (C. 1782).

Cyperus cuspidatus var. *angustifolia*. (C. 1831).

Cyperus compressus, L. Common. (C. 1779).

Cyperus Haspan, L. Very Common. (C. 1788).

Cyperus pulcherrimum Wight. Common in Rice fields.

Cyperus Iria, L. (C. 1780, 1871, 1952).

Cyperus distans, L. Common anywhere. (C. 875, 1785, 1832).

Cyperus rotundus, L. moderately Common. (C. 1781, 1953).

Cyperus pilosus, Vahl. Tanjong Bunga. (C. 1830).

Cyperus procerus, Rottbl. Waterfall. (C. 1787).

Cyperus auricomus, Sieb. Ditches; not Common. (C. 872).

Cyperus pennatus, Lour. Common. (C. 104).

Cyperus umbellatus, Benth. Waterfall, not common. (C. 491, 1783).

Cyperus turgidulus. Clarke. Tanjong Bunga. (C. 883).

Cyperus Griffithii, Steud. Open places in pure sand. (C. 884).

Cyperus Zollingerii, Steud. Waterfall, rare. (C. 1833).

Cyperus radiatus, Vahl. Bagian Jermal. (C. 1956).
Cyperus, sp. may be *flavidus*, Waterfall. (C. 1805).
Cyperus, sp. in way of *turgidulus*, Clarke. (C. 2173.)
Mariscus Dregeanus, Kunth. Tanjong Tokong. (C.).
Mariscus sieberianus, Nees. (C. 1955).
Mariscus cyperinus, Vahl. (C. 1786).
Mariscus microcephalus, Presl. Waterfall, common. (C. 1873, 1874).
Kyllinga brevifolia, Rottbl. Common all over the Island. (C. 1808).
Kyllinga monocephala, Rottbl. (C. 1823).
Fimbristylis nutans, Vahl. (C. 1868, 1869).
Fimbristylis schœnoides, Vahl. (C. 1822).
Fimbristylis miliacea, Vahl. (C. 1792).
Fimbristylis asperrima, Bœck. (C. 1595, 1793).
Fimbristylis filiformis, Kunth. (C. 1789).
Fimbristylis diphylla, Kunth. (C. 1790).
Fimbristylis globulosa, Vahl. (C. 1791).
Bulbostylis barbata, Kunth. (C. 885).
Scirpus grossus, L. (C. 350).
Scirpus debilis, Pursh. (C. 1904, 2178).
Scirpus mucronatus, L. (C. 1962.)
Eleocharis equisetina, Presl. (C. 1905, 2176).
Eleocharis variegata var. laxiflora. (C. 1265, 2177)
Fuirena glomerata, Lam. (C. 497).
Lipocarpha argentea, R. Br. (C. 1807).
Hypolyptrum giganteum, Wall. (C. 15. 490).
Mapania, sp. (C, 1820).
Remirea maritima, Aubl. (C. 1861).
Rhynchospora aurea, Vahl. (C. 1256).
Scleria lithosperma, Willd. (C. 1794).
Scleria hebecarpa, Nees. (C. 1828).
Scleria sumatrensis, Retz. (C. 22).
Scleria Steudeliana, Bœck. (C. 1907).
Carex indica, L. (C. 1207).
Carex cryptostachys, Brongn. (C. 1910).

GRAMINEÆ.

Paspalum scrobiculatum, L. (C. 492).
Paspalum conjugatum, Berg. (C. 493).
Paspalum distichum, Burm. (C. 1957).
Isachne puchella, Roth. (C. 496).
Isachne australis, Br. (C. 1813).
Panicum sanguinale var. *australe*, (C. 1801, 1914).
Panicum parvulum, Trin. (C. 1919).
Panicum colonum, L. (C. 68).
Panicum myosuroides, R. Br. (C. 1960).
Panicum Crus-galli, L. (C. 1958).
Panicum indicum, L. (C. 1802).
Panicum miliare, Lam. (C. 1803).
Panicum cimicinum, Retz. (C. 1829).
Panicum incomptum, Trin. (C. 132, 1809, 1908).
Panicum nodosum, Kunth. (C. 1917, 1918).
Panicum auritum, Presl. (C. 1818).
Panicum trigonum, Retz. (C. 1824).
Panicum Myurus, Lam. (C. 1903).
Panicum luzonense, Presl. C. 1915).
Panicum multinode, F. (C. 1961).
Panicum radicans, Retz. (C. 1916).
Panicum parvulum, Nees. (C. 1814).
Panicum fimbriatum, Nees, (C. 1257).
Oplismenus compositus, R. and S.
Oplismenus Burmanni, Beauv. (C. 1825).
Setaria glauca, Beauv. (C. 1259, 1959).
Leptaspis urceolata, Br. and Benn. (C. 1758).
Coix lachryma, Jobi; L. (C. 58).
Leersia hexandra, Swartz. (C. 1902).
Perotis latifolia, Ait. (C. 9, 1817).
Zoysia pungens, Willd. (C. 1812).
Imperata arundinacea, Cyr. "Lalang" (C. 1816).
Pogonatherum polystachyum, R. and S. (C. 877).
Ischœmum muticum, L. (C. 1810).
Ischœmum ciliare, Retz. (C. 1806).
Ischœmum timorense, Kunth. (C. 2167).
Rottboellia glandulosa, Trin. (C. 1913).

Andropogon contortus, L. (C. 1906, 1912).
Andropogon nardus, L. (C. 91).
Andropogon squarrosus, L. (C. 1819).
Chrysopogon aciculare, Trin. (C. 1799.
Themeda gigantea var. *villosa*. (C. 1971).
Themeda arguens, Hack. (C. 1911).)
Sporobolus elongatus, R. Br. (C. 876).
Sporobolus diander, Beauv. (C. 1826).
Cynodon dactylon, Pers. (C. 1811).
Eleusine indica, Gærtn. (C. 1796).
Eleusine coracana, Gærtn. (C. 1118).
Eleusine œgyptiaca, Pers. (C. 1797).
Leptochloa chinensis, Nees. (C. 1951).
Phragmites Roxburghii, Kunth. (C. 125).
Eragrostis unioloides, R. and S. (C. 1800).
Eragrostis Brownii, Kunth. (C. 1805).
Eragrostis Wightiana, Bl. (C. 882).
Eragrostis plumosa, Retz. (C. 1827, 2169).
Eragrostis pilosa, Beauv. (C. 1804).
Centotheca lappacea, Desv. (C. 36, 1815).
Thysanolœna acarifera, Nees. Government Hill. (C. 1909).
Arundo donax, cultivated. (C. 1981).
Bambusa nana, Roxb. The Hedge bamboo is cultivated. (C. 1720).

FILICES.

Gleichenia, longissima, Bl.; fronds 8-10 feet long. Government Hill 2,000-2,500 feet. (C. 531).

Gleichenia flagellaris, Spreng. "Resam." Common up to 1,000-1,500 feet. (C. 533).

Gleichenia hirta, Bl. Government Hill, Hullett.

Gleichenia dichotoma, Willd. Abundant. (C. 532).

Gleithenia, sp.; appears to be distinct from either of the preceding. (C. 534).

Cyathea Brunonis, Wall.; stem 3-4 feet; frond 2-3 feet. Government Hill 2,000-2,500 feet. (C. 535).

Amphicosmia alterans, Hook. fil., collected by Wallich, Sir William Norris and Cantley.

Alsophila latebrosa, Hook. fil.; stem tall. Government Hill. (C.).

Alsophila glauca, Smith ; stem stout. Not uncommon. (C.).

Alsophila comosa, Hook. Government Hill. (537).

Alsophila glabra, Hook. Government Hill. (538).

Cibotium Barometz, Link. Government at 1,000 (Cantley).

Hymenophyllum tenellum, Klein. On damp rocks at 1,500-2,000 feet. (C. 540).

Hymenophyllm rarum, Br. Government Hill. (Bishop Hose).

Hymenophyllum polyanthos, Sw. var. *Blumeanum ;* fronds 12-18 in. long. Damp shady ravines. (C. 1724).

Hymenophyllum australe, Willd. (*Javanicum Spreng*). Government Hill. (C. 539). var. *Badium*. Government Hill (Hullett).

Hymenophyllum Smithii, Hook. West Hill 2,500 feet. (C.).

Hymenophyllum aculeatum, V. D. B. at 3,000 feet. King.

Trichomanes digitatum, Sw. West Hill 2,000 feet. (C. 1174).

Trichomanes bipunctatum, Poir. Government Hill, on rocks (C. 542).

Trichomanes javanicum, Bl. West Hill, damp ravines. (C. 541).

Trichomanes radicans var. *Kunzeanum*, Government Hill. (Hullett).

Trichomanes pallidum, Bl. Not seen. Collected by Lady Dalhousie.

Humata heteropylla, Smith. Not seen.

H. angustata, Wall. West Hill, on trees. (C. 543).

H. pedata, Smith. Abundant in many places. (C. 544).

Leucostegia hymenophylla, Not identified.

Leucostegia affinis, Hook. Ayer Hitam. (C. 545).

Prosaptia Emersonii, Hook. fil. Moniot's Road, not uncommon. (C. 546).

Davallia solida, Sw. ; caudex stout ; fronds large. Common on rocks at low elevations. (C. 547).

Davallia elegans, Sw. Penang Hill.

Davallia Lorrainii, Hance ; fronds 6-8 in. Government Hill 2,000-2,500 feet. (C.).

Microlepia pinnata, Cav.; fronds 12-18 in. Government Hill 2,000-2,500 feet, abundant. (C. 548).

Microlepia speluncæ L. (C. 629).

Stenoloma chinensis, Sw.; var. *Veitchii*. Government Hill 1,500-2,000 feet. (C. 549).

Lindsaya cultrata, Sw.; fronds 6-7 in. Waterfall, rare (C. 1710).

Lindsaya scandens, Hook. Government Hill. (C. 550).

Lindsaya flabellulata, Dry.; a very variable plant. (C. 553).

Lindsaya trapeziformis, Dry. Government Hill. (C. 551, 554).

Lindsaya divergens, Wall. Government Hill 2,000 feet. (C. 552).

Lindsaya lanuginosa, Wall. Not seen.

Schizoloma davallioides, Bl. Government Hill. (Hullett).

Schizoloma lobata, Poir. Government Hill.

Adiantum lunulatum, Burm. Balik Pulau. (C.).

Adiantum flabellulatum, L; frond 8-12 in long. Abundant in one or two places. (C. 555).

Cheilanthes tenuifolia, Sw. Steep banks, Ayer Hitam. (C. 556).

Pteris longifolia, L. Not uncommon on old brick walls. (C.).

Pteris cretica, L. Government Hill.

Pteris pellucida, Presl. West Hill on boulders in mid-stream. (C. 998).

Pteris crenata, Sw. Common in hedges. (C. 557).

Pteris semipinnata, L. Batu Hitam 1,000 feet, rare. (C. 935).

Pteris Dalhousieæ, Hook. Not seen. Apparently only collected by Lady Dalhousie.

Pteris quadriaurita, Retz. Balik Pulau road. (C. 1,001).

Pteris longipinnula, Wall. Not seen.

Pteris aquilina, L. Not uncommon at 1,000-2,000 feet and occasionally near sea-level. (C.).

Campteria biaurita, L. Pulau Betong. (C. 538).

Litobrochia incisa, Thunb. Common. (C.).

Litobrochia marginata, Bory. Balik Pulau. (C.).

Ceratopteris thalictroides, L. Ditches and swampy places. (C. 113).

Blechnum orientale, L. Abundant, up to 2,000 feet. (C.).

Blechnum Finlaysonianum, Wall. Government Hill 2,000 feet, not common. (C. 1002).

Thamnopteris nidus, L. Common on trees and rocks, not far from the coast. (C. 559).

Thamnopteris nidus, var. *phyllitidis*.

Asplenium Griffithianum, Hook; frond simple 6-10 in long. (C. 656).

Asplenium subavenium, Hook. Collected by Mactier.

Asplenium unilaterale, Lam. Damp ravines, rare. (C. 567).

Asplenium longissimum, Bl. Penara Bukit on steep banks, abundant. (C. 561).

Asplenium Wightianum, Wall. Not common. (C. 561).

Asplenium tenerum, Forst. Not uncommon on trees, at about 2,000 feet elevation. (C. 560).

Asplenium hirtum, Kaulf. Batu Hitam, rare. (C. 564).

Asplenium macrophyllum, Sw. Common. (C. 562, 566).

Asplenium paradoxum, Bl. Not identified.

Asplenium nitidum, Sw. Not common. (C. 568).

Asplenium Mactieri, Bedd. Collected by Mactier.

Asplenium laserpitiifolium, Lam. Government Hill. (C. 563).

Asplenium bulbiferum, Forst. not seen.

Asplenium subserratum, Bl. Moniot's Road. (C. 570).

Asplenium pallidum, Bl. Penara Bukit. (C. 1268).

Diplazium porrectum, Wall. West Hill 2500 H. (C. 1000).

Diplazium tomentosum, Hook. fil. Penara Bukit. (C. 1267).

Diplazium chlorophyllum, Bak. (C.).

Diplazium Bantamense, Bl. not seen.

Diplazium speciosum, Bl.? (C. 571-999) Government Hill.

Diplazium sylvaticum, Presl. var. *Prescottianum;* Wall. Government Hill.

Diplazium Sorzogonense, Presl. fronds 18-24 in (C. 1723).

Anisogonium cordifolium, Mett. Penara Bukit, rare. (C. 1194).

Anisogonium esculentum, Presl. Common in damp places (C.).

Anisogonium lineolatum, Mett. Moniot's Road. (C. 573).

Hemidictyon Finlaysonianum, Wall. Not seen.

Mesochloena polycarpa, Baker. not uncommon. (C. 574).

Aspidium aculeatum, Sw. Government Hill 1000-2000 feet, common. (C. 575).

Aspidium semibipinnatum, Wall. Not seen.

Aspidium variolosum, Wall. Waterfall. (C. 1608). Bishop Hose.

Aspidium vastum, Bl. Penang.

Aspidium Singaporianum, Baker. Waterfall. (C. 576).

Aspidium polymorpha, Baker. Waterfall. common (577).

Lastrea immersa, Bl. Open places, common. (C. 580).

Lastrea calcarata, Hook. fil. Government Hill (Hullett).

Lastrea crassifolia, Bl. Government Hill. (C. 579).

Lastrea intermedia, Bl. and var. *Blumei*. (C.).

Nephrodium intermedium, Baker. Government Hill. (C. 636).

Nephrodium unitum, R. Br. Common. (C. 583).

Nephrodium molle and the var. *procurrens*, Baker. Government Hill. (C. 585).

Nephrodium pennigerum, Bl. Government Hill, Hullett.

Nephrodium aridum, Baker. Pulau Betong. (C. 581).

Nephrodium moulmeinense ? (C. 584).

Nephrodium urophyllum, Bedd. (C. 582).

Nephrodium multilineatum, Wall. Penang Hill, Wallich.

Nephrolepis exaltata, Schott. Common. (C.).

Nephrolepis volubilis, J. Smith. (C. 587).

Nephrolepis acuta, Presl. (C.).

Oleandra neriiformis, Cav. Government Hill, rare. (C. 1607).

Polypodium subevenosum, Baker; small plant; fronds 3-4 in. Government Hill on damp rocks. (C. 588).

Polypodium universe, Bak. (C.).

Polypodium decorum, Brack. Government Hill, on trees and rocks. (C. 589).

Dictyopteris Barberi, Hook. fil. Not seen.

Goniophlebium verrucosum, Wall. Not seen.

Niphobolus adnascens, Sw. Very common. (C. 590, 591).

Niphobolus penangianus, Hook; fronds 12-18 in. Government Hill, towards Ayer Hitam. (C. 592).

Pleopeltis sinuosa, Wall.; frond simple 6-9 in. Ayer Hitam, on trees. (C. 595).

Pleopeltis stenophylla, Bl.; fronds about 6 in. (C. 602).

Pleopeltis angustata, Sw. Top of Government Hill. (C. 596).

Pleopeltis nigrescens, Bl.; stipe 6-18 in.; frond 12-18 in. Damp places, on rocks. (C. 600).

Pleopeltis membranacea, Don. Government Hill. (C. 597).

Pleopeltis musæfolia, Bl.; frond 2-3 feet. West Hill at about 2,000 feet, rare. (C. 598).

Pleopeltis phymatodes, L. Sea coast, abundant. (C. 599).

Drynaria quercifolia, L. Waterfall, common. (C. 594).

Drynaria rigidula, Sw. Government Hill. (C. 593).

Drynaria palmata, Bl. Government Hill, on damp rocks. (C.).

Dipteris Horsfieldii, Br.; stipe 3-7 feet; frond 1-3 feet. West Hill 2,000-2,500 feet, abundant. (C. 632).

Gymnogramma alismæfolia, Hook. fil.; stipe 10-12 in.; frond 12-18 in. West Hill 2,000 feet. (C. 603).

Gymnogramma avenia, Baker; frond 6-18 in. Damp shady places at 1,000-2,000 feet. (C. 605).

Selliguea Feeii, Hook. fil.; stipe 4-10 in.; frond 3-5 in. long. Government Hill, common. (C. 604).

Selliguea involuta, Don. Not identified.

Drymoglossum piloselloides, Presl. Abundant. (C. 1003).

Meniscium salicifolium, Wall. Ayer Hitam. (C. 616).

Antrophyum plantagineum, Kaulf. (C. 606).

Antrophyum reticulatum, var. *parvum* of Beddome. Not identified.

Vittaria elongata, Sw. Common. (C.).

Vittaria scolopendrina, Presl.; fronds 18-24 in Government Hill, not common. (C. 608).

Tænitis blechnoides, Sw. Government Hill, common. (C. 610 .

Stenochlæna Norrisii, Hook. Government Hill 2,000 feet. (C. 1606.?)

Stenochlæna palustris, L. Waterfall &c. abundant. (C. 611).

Polybotrya appendiculata, Willd. Common. (C. 612).

Gymnopteris sub-repanda, Hook. fil.; stipe of barren frond 6-9 in.; frond 6-12 in. Balik Pulau, rare. (C. 628).

Gymnopteris virens, Wall. Government Hill. (C. 618.?)

Gymnopteris flagellifera, Wall. Government Hill. (C. 615).

Gymnopteris spicatum, L. West Hill, common. (C. 613, 614).

Acrostichum aureum, L. Tidal swamps, abundant. (C.).

Photinopteris rigida, Wall. West Hill, rare. (C. 619).

Photinopteris drynarioides, Hook. fil. Government Hill near the Bungalow, not common. (C.).

Platycerium biforme, Bl. More or less common all over the Island (C. 639).

Schizæa digitata, Sw. West Hill (C.)

Lygodium circinatum, Sw. (C. 622).

Lygodium scandens, var. *microphylla*. Br. (C. 623).

Lygodium pinnatifidum, Sw. (C. 623).

Lygodium polystachyum, Wall. Waterfall, not common (C. 625).

Angiopteris evecta, Hoffm. Not uncommon (C.).

LYCOPODIACEÆ.

Lycopodium cernuum, L. Common in Penang.

Lycopodium phlegmaria, L. collected by Wallich.

Lycopodium Dalhousieanum, Spring. collected by Lady Dalhousie.

Lycopodium nummularifolium, Bl. collected by Lady Dalhousie.

Selaginella pinangensis, Spring. collected by Gaudichaud.

Selaginella trichobasis, Baker. collected by Wallich.

Selaginella alutacea, Spring. Damp banks on Penang Hill Maingay.

Selaginella atroviridis, Spring. Wallich, Gaudichaud.

Selaginella plumosa, Bak. Wallich No. 122.

Selaginella Wallichii, Spring. Wallich, Lady Dalhousie.

Selaginella Willdenovii, Spring. (C.).

Selaginella caulescens, Spring. Wallich, Gaudichaud.

Selaginella caulescens, var. *argentea*, Wallich 127. Lady Dalhousie.

Selaginella chrysocaulos, Spring. Wallich 127 bis.

Psilotum triquetrum Sw. collected by Wallich.

THE BOTANISTS OF PENANG.

The number of students of botany in Penang in past years has not been great, and of some of those that are here mentioned I can get little or no information. Some whose names appear associated with plants seem merely to have collected a few specimens and transmitted them to Europe but as they are sometimes the only authority for the occurrence of certain plants in Penang, I have thought it as well to collect what information I can about them.

WILLIAM ROXBURGH was born in 1759 and took charge of the Calcutta Gardens in 1793. He seems to have never visited Penang, but received a certain number of living plants thence which he cultivated in the Gardens, and described in the *Flora Indica* published after his death in 1820.

Some of these such as *Melia tomentosa* and *Alpinia mutica* have not since been met with in Penang, and it is very likely that they were either cultivated in Penang and sent to him as if native there, or were wrongly labelled in the Calcutta Gardens.

In 1807 WILLIAM HUNTER, of the Bengal Medical Establishment, published a paper in the Linnean Society's Transactions on Gambier, as cultivated in Penang.

NATHANIEL WALLICH was born in Copenhagen in 1786. and went to India in 1807, taking charge of the Calcutta Gardens then belonging to the East India Company in 1815. He made his first great exploring expedition into Nepal in 1820, and returning thence ill went for a voyage to Penang and Singapore and visited several other parts of the Peninsula

(1822). He remained here for five months residing in Singapore in a house called Botany Hall on what is now Mount Wallich near the New Harbour Docks. While here he met Sir STAMFORD RAFFLES and WILLIAM JACK and also G. FINLAYSON, all of whom contributed plants to his herbarium.

WILLIAM JACK accompanied RAFFLES as botanist to Bencoolen in Sumatra in December, 1818, and later went to Penang. In both of these localities he made most extensive collections and published two short papers in the Malayan Miscellanies which have been reprinted in Hooker's Botanical Magazine and later in the Indo-Malaysian Essays of this Society. JACK'S health broke down in 1822, and he died at Bencoolen as he was starting for the Cape of Good Hope to recover his health. A number of his plants were sent to WALLICH and distributed with the East Indian Company's herbarium. The rest with all his manuscripts and a large series of over two thousand drawings were on board the illfated vessel, the "Fame" which was burnt at sea on the way to England, the whole collection being destroyed. Most of the plants described by JACK from Penang and those that were sent by him to WALLICH have been re-discovered of late years, but a few have escaped recent collectors, and it possible that some of those which were distributed by WALLICH as from Penang were really collected in Sumatra. JACK'S name has been associated with several Malayan plants including the beautiful Rubiaceous tree, *Jackia ornata.*

GEORGE FINLAYSON was a native of Thurso, who became Assistant Surgeon in the 8th Regiment of Light Dragoons and was attached to the Mission from the Bengal Government to Siam and Cochin China in 1821. He returned to Singapore in 1822 seriously ill with consumption and died shortly after reaching England.

He made good collections in the various part of the peninsula he visited, chiefly in Siam and Cochin China, and was the first botanist to visit the Dindings where he collected *Dracœna Finlaysoniana* which grows there to this day.

Many of his plants were sent to the East India Company's Herbarium and were finally distributed when that Herbarium was broken up. Unfortunately many specimens appear not to have been adequately labelled, and some of those cited in books as coming from Penang may have come from Cochin China. WALLICH named the rare Asclepiad *Finlaysonia obovata* after him and his name has been perpetuated by two of our commonest and most charming orchids *Bromheadia Finlaysoniana* and *Cymbidium Finlaysonianum.*

After his return to Calcutta Wallich received many plants from collectors employed in Penang and chief among these was GEORGE PORTER, whose name is associated with the common dwarf Dracæna *Dracæna Porteri.* Dr. Prain has kindly examined the Wallichian correspondence at Calcutta to find out something about this collector, and Mr. KYNNERSLEY has also given me some additional information about him. The latter says that in August 1822 the Headmaster of the Penang Free School resigned and Mr. PORTER who was recommended by Dr. WALLICH was appointed at a salary of $100.

The same year however a Government Botanic Garden was started near Ayer Hitam and Porter was put in charge, though a judge, Mr LEYCESTER, was nominally the curator. He remained there till 1834, at least, when the gardens were sold by Governor Murchison for 1250 rupees. He did not apparently have a very happy time as Superintendent of the gardens for Governor IBBETSON or rather his wife made trouble because Porter did not supply enough vegetables for their table. In 1834 he sent the first plants of Patchouli to Calcutta Gardens, and this is the last I have heard of him, Dr. PRAIN thinks that he got appointed Schoolmaster again through the interests of WALLICH'S friends.

The East India Herbarium was eventually dispersed, the study set being preserved at the Linnean Society's rooms in London. WALLICH compiled and published a catalogue of it, and the plants distributed are quoted in this paper as (Wall. cat.) After this period botany seems to have faded away in Penang, and nothing was done in it for many years.

Mention must be made however of Governor W. E. PHILLIPS who sent some plants to Kew which are mentioned in the Flora of British India. Mr. KYNNERSLEY is my authority for the following notes. Mr. PHILLIPS was appointed Secretary to Government in 1800, and became Collector of Customs and Land Revenues in 1805, and eventually Governor it 1820. He retired in 1824, being presented then by the inhabitants of Penang with a gold cup. He was an able man and gave special attention to the land question which he seems thoroughly to have understood. He resided at Suffolk House where Crawfurd visited him in 1819, and describes the place as an English gentleman's mansion and park where cloves and nutmegs in full bearing were substituted for oaks, elms, and ashes. The grounds contained two to three hundred spotted deer. It was he who started the Ayer Hitam gardens.

The next botanist who appears at Penang was a Colonel Walker who in or about 1837 collected a number of plants which were distributed to various European Museums.

In 1842 or thereabouts GEORGE GRIFFITH came as Government Botanist to Malacca. He was well known for his explorations in Assam, where he had made extensive collections. He seems never to have visited Penang but received a few plants thence from T. LEWIS, Assistant Resident Councillor, after whom he named *Appendicula Lewisii* and *Calamus Lewisianus*.

Amongst other collectors who sent plants to England about this time may be mentioned Sir WILLIAM NORRIS (after whom *Norrisia* was named) who sent specimens to Sir WILLIAM HOOKER, and Lady DALHOUSIE, who is better known for her Botanical work in the Himalayas but who sent home also a collection of plants from Penang.

WILLIAM LOBB, an Orchid collector for Messrs. VEITCH visited this region in 1845 in search of ornamental plants for cultivation and besides sending home many plants alive, made a collection of dried specimens, which have been distributed to various Herbaria. Unfortunately many of these were either not at all or wrongly localised and as he collected not only in Penang and Singapore but also in Borneo and the Philippine islands, some of the plants quoted in books as, "Penang LOBB," were really collected in the further islands of the Malay Archipelago. Among the well-known plants which bear his name are *Aeschynanthus Lobbii* and *Dipteris Lobbiana.*

Surgeon-General Maingay resided in Malacca from 1863 to 1868 and thence visited Penang and made extensive collections of plants, in both these places as well as in Singapore. After his death in the Andaman islands in 1870, his collections were bequeathed to Kew and the plants described in the Flora of British India and other publications. Most of the species said to have been collected by him in Penang have been since rediscovered, but perhaps some of those which have not been met with again have been wrongly localised as his plant-tickets often had no localities marked on them.

The flora of Penang has probably altered but little since Wallich's time. There has not been here the extensive denudation of forests which has occurred in Singapore, but without doubt the flora of the lowlying country especially near the town has undergone much change. Large as the number of known species in so limited an area is, without doubt many more remain undiscovered and with them perhaps we shall get again most of those formerly found only by the earlier collectors. In this catalogue the earlier authorities are only quoted for species which have not been seen of late years.

H. N. R.

OCCASIONAL NOTES.

EARTHQUAKE IN THE MALAY PENINSULA.

The rarity of earthquakes in the Malay Peninsula is somewhat remarkable, as though the volcanic belt of the Archipelago is absolutely outside this region, it approaches so near that one would imagine that disturbances would constantly make themselves felt here.

From time to time tremors more or less faint have been experienced in Singapore, but no record seems to have been kept of these. It is stated by residents that a shock equalling in intensity the one which shook Singapore and a large portion of the Peninsula on the night of May 17th, 1892, was felt in 1861, but no details of this earlier occurrence were preserved. The recent shock occurred at 8.10 p.m., and at Tanglin it commenced comparatively lightly and increased rapidly in violence till the whole house was violently shaken, so that glasses and furniture rattled and doors kept banging to and fro, and then it gradually died away.

The duration of the tremors was very variously reported by observers as from six seconds to three minutes, but no one seems to have taken an accurate record. At Tanglin it seemed, as nearly as I could judge (for I did not notice its commencement), to be nearly four minutes before the vibration of the house had entirely died away, but the violent period I estimated at about a minute's duration. One observer, Mr. T. A. WANDALE, residing at Pasir Panjang, noticed two distinct oscillations, the first lasting apparently thirty seconds, the second (which was more violent) with very distinct undulations lasting for about twenty-five seconds, there being an almost complete cessation of movement for ten seconds between the two waves. In Deli (Sumatra) "the shocks were more severe and had a slow, rolling and tremulous motion culminating in a heavy shock which occurred three times in succession." (*Straits Times*). No distinct shocks were felt in any part of the Peninsula, nor was any sound heard during the tremors, except that of the moving timbers, glasses, etc. No damage is reported from any part of the Peninsula, nor any absolute displacement of furniture, except that at Telok Ayer (Singapore) where a lamp glass and ruler were shaken off a table upon the floor. Much damage, however, is reported at Padang Sidempuan in Tapanuli district, Sumatra, and also to a less extent in Deli, and Rantan Perapat. In Singapore much alarm was caused to the natives, who ran out of their houses, and one Chinaman was so frightened that he leaped out of a window and broke his leg. Mr. Justice GOLDNEY reports that just before the shock was felt a number of black and white robins (*Copsycus musicus*) flew into the house, and some were caught by the cat.

No tidal wave was observed on the Singapore coasts, but at Muar, a steamer lying at the wharf was moved repeatedly, and off Singapore and Johor ships and boats were rocked about.

The earthquake was felt all over Singapore, in Johor, Muar, Malacca, Jelebu, Penang, Province Wellesley and at Pekan, besides the places mentioned in Sumatra, but not in Borneo nor Java. In certain spots in Singapore nothing was noticed, such were Government Hill and Fort Canning. It is well known that earthquakes have a habit of skipping over certain places, which spots have been termed "earthquake bridges." MILNE (Earthquakes, p. 141) says: "When an elastic wave passes from one bed of rock to another of a different character a certain portion of the wave is transmitted and refracted and bridges we may conceive of as occurring where the phenomenon of total refraction occurs." It is possible that this may account for the absence of the tremors in these spots, but in some cases where nothing was noticed, the observers were walking or standing on the ground, and the shock being comparatively weak was not perceived as it was by persons in wooden houses on piles which naturally were more unstable and thus would move with the slightest shock. The tremors were all horizental, and in the Peninsula ran from West to East. From the nature of the vibrations it may be suggested that the shock itself was at a considerable distance from Singapore. The exact direction in which the wave ran does not appear to be quite certain, as no one seems to have attempted to settle it by experiment at the time. From Malacca the vibrations are reported to have come from the N.N.W. and this is probable as they were more violent at Deli which is N.N.W. of Malacca. At Pasir Panjang they apparently travelled S.S.W. to N.N.E. or from S.W. to N. E. At Tanglin they appeared to travel from S.W. to N.E., but from the movements of a certain door, I believe they were really from the North-West.

In Medan, on the other hand they were felt as travelling from East to West. If this is correct, the starting point of the shocks must have been somewhere between South of Deli and North of Malacca, and a volcano called Sarek Berapi is said to have been the one from which the vibrations started. In conclusion, it is, I think, worth remarking that the weather for some time before the earthquake occurred was remarkably hot and oppressive in Singapore, as unusually hot weather has in other cases of earthquake been observed as preceding the shock.

H. N. R.

ON THE OCCURRENCE OF THE RARE BAT-HAWK IN JOHOR.

In December last, the Bird Collector of the Raffles Museum shot in Johor a fine specimen of the very rare Hawk, *Machœrhamphus alcinus* (Westerm.).

Of the genus *Machœrhamphus*, only two species are known, viz., this one and *M. Andersoni*, whose habitat is Damara Land in South-West Africa, and Madagascar.

With reference to *M. alcinus*, Mr. E. W. OATES in his "Birds of British Burmah" says :—

"The slender-billed Pern is a very rare species, about which "little is known. Mr. HOUGH procured one specimen at

"Malewoon in Tenasserim, and Captain BINGHAM informs "me that he thinks he once saw it in the Thoungyeen Valley.

"It has been known to occur at Malacca, in Borneo, and in "New Guinea.

"This species is probably crepuscular in its habits; and if "this is the case its apparent scarcity is accounted for. An "allied species in Africa feeds on bats.

"This Hawk has a remarkably narrow carinated bill, large "eyes, a very wide gape and an elongated occipital crest."

The Johor specimen is about 18 inches in length, and its general colour is dark amber brown, almost black in parts; the throat and upper breast are white.

This is the only specimen of this bird in the Raffles Museum.

H. J. K.

A LARGE BEETLE CAUGHT IN A PITCHER OF NEPENTHES.

The greater number of the insects which find their death in the pitchers of the pitcher plant (Nepenthes) are very small, such as ants, small cockroaches and flies, and I do not think that any insect has been found fairly entrapped as big as a beetle which I found recently in a pitcher of the beautiful *Nepenthes sanguinea* on the very summit of Gunong Ledang, commonly known as Mount Ophir. This was a female of the brown stag-beetle, *Odontolabris gazella*, 2 inches in length and 1 across the body, exclusive of the spread of its legs. It was quite dead and floating flat in the water contained in the pitcher, which was one of very large size.

THE BIRD DROPPING SPIDER (ORNITHOSCATOIDES) IN JOHOR.

Among the large number of curious and interesting spiders in the Malayan region, few are more remarkable than the *Ornithoscatoides*, which is so coloured as to exactly mimic a piece of bird's-dung fallen upon a leaf. This spider was described by H. O. FORBES in his "Wanderings of a Naturalist" and by the Rev. O. PICKARD CAMBRIDGE, in the same work. During a visit to Gunong Panti in Johor, I was pleased to meet with a species aparently of this genus, which was engaged in sucking the juice of a red bug, which it had captured. FORBES describes and figures his species as spinning a thin web upon a leaf to represent the watery portion of the excreta and then lying upon its back on the web to which it holds by some strong spines on the back of its legs, it waits for some incautious butterfly to alight on the supposed bird's dropping, when it immediately secures the prey. The specimen I found had left its web, a thin circular white film on the leaf of a wild plantain, to devour its capture. On comparing it with the descriptions above quoted, I find that, in the colouring of the body and several structural points, the Gunong Panti spider differs form FORBES' *Ornithoscatoides decipiens*, collected in Java and Sumatra, and it is probably a distinct species.

H. N. R.

NOTES ON GALLUS VIOLACEUS.

In the description of *Gallus violaceus* in No. 24 of this Journal
page 167 3rd line from foot of page for 'shaded' read 'shafted'
,, 168 1st line ,, do. ,, do.
,, 168 8th line ,, 'brown' ,, 'horn.'

Two more specimens (both males) of this bird have recently come under my notice. They were in the possession of a native animal dealer in Singapore but he could not give me any definite information as to where they came from. He said he thought they came from Java but was not certain and it is far more probable that they come from further east.

H. J. K.

A MALAY LULLABY.

The following may be of interest as representing the "Baby Baby Bunting" style of rhyme of the Malay.

This one is sung when putting children to sleep, and is generally used in Naning and also in the Negri Sembilan.

It is hence called "Lagu Buai." The tune is pretty though monotonous and suits the words well from what might be termed an onomatopœic view, as it is evident that the words of the lines have no actual meaning, and I cannot discover any special origin for them.

"Chapah menggulai chapah lah sayang."
"Chapah menggulai chapah lah sayang."
"Chapah didalam kélong."
"Chapah didalam kélong."
"Má mana bapa di mana lah sayang."
"Má mana bapa di mana lah sayang."
"Má ada di pintu kélong."
"Má ada di pintu kélong."

M L.

◆

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A JOURNEY ON THE SEMBRONG RIVER.

From Kuala Indau to Batu Pahat.

BY H. W. LAKE AND H. J. KELSALL, R.A.

Personal Account of the Journey.

The party, consisting of Mr. Lake and myself, with a native surveyor and native bird and plant collectors, left Johor Bahru in the launch Pulai on the 15th October, 1892, and that evening anchored at Tanjong Surat at the mouth of the Johor river.

Getting under way at 6 a.m. the following morning, we reached Tanjong Tingaroh, about 70 miles up the east coast of Johor, shortly before nightfall.

Here Mr. Lake went off in a dingy to make a rapid survey of the small river Tingorah, which enters the sea just south of the point, while I went ashore to collect. On the rocks at the end of the cape were quantities of Orchids, the most conspicuous being *Cirrhopetalum Medusæ*, *C. concinnum* and the common Pigeon Orchid *(Dendrobium)*.

The only birds I noticed were a single large heron *(Ardea Crumenatum)* some terns, green pigeon and the common little king fisher *(Alcedo ispida)*.

Early the next day the Pulai steamed into Kuala Indau under the pilotage of a piratical-looking old Malay whom we picked up outside the bar with which this river, like all these on the east coast of Malaya, is furnished.

Here we all disembarked and while Mr. Lake was making arrangements for boats, etc., for the journey up the river, I went forth in search of spoils, zoological and botanical, but met with but little success.

In a steep of jungle near the sea, I found a fine tree of a wild durian *(Durio)* loaded with its beautiful crimson fruit, and on the river-bank a small bed of the reed *(Phragmites roxburghi).* The only Mammal I saw was a Wau-Wau or Ungka of the black variety with white hands *(Hylobates albimanus, Vig. and Horsf.)*

The river near its mouth describes almost a complete circle, forming a peninsula of several miles diameter which is connected with the mainland by a neck barely quarter of a mile across ; so, having procured a large boat or skuchi and loaded it up with our baggage we sent it off early in the afternoon to meet us some hours later at the other side of this neck, when after cooking and eating our evening meal on the river bank we proceeded up stream. A halt was made from midnight till 3 a.m., on account of the tide which was then running down very strong, and we reached Kuala Sembrong at 10 a.m., on the 17th October.

The river up to this point is broad and deep, and the banks in many places are lined with dense beds of "Rasau," a slender almost unbranched pandan with small leaves, which grows to a height of 15 or 20 feet.

For some miles from the Kuala the water of the river was phosphorescent where disturbed by the paddles. In the bushes along the banks were swarms of the small "fire-fly" (a small yellow beetle) which abounds in mangrove swamps and which extinguishes and relights its tiny lamp with such regularity that a swarm of them often have the appearance of concerted action, all the individuals composing it extinguishing and relighting their lamps at the same moment as if actuated by clock-work.

The little Malayan hornbill *(Anthracoceros convexus)* is common in this district, and we noticed several Rhinoceros hornbills (*Buceros rhinoceros*). The former always goes in flocks of from three or four up to as many as eight or ten, the latter usually in pairs.

The country from Kuala Indau up to Kuala Sembrong is perfectly flat and covered with dense uninhabited jungle, of which perhaps the most striking feature is the abundance of rotans of various species, the most conspicuous along the river banks being "Rotan S'ntawa."

On the 19th October, leaving the bird collector and one plant collector with the bulk of the baggage at the police station at Kuala Sembrong and taking sufficient provisions for three days, we continued up the Indau in order to ascend Gunong Janeng and explore the rivers Mas and L'makan.

After poling for about two hours and a half we passed Kuala Mas on our left and five hours later, about 4 p.m., the Jakun clearing just below Kuala L'makan came in sight. For some miles below this place the river had been gradually becoming shallower and we found that the skuchi could proceed no farther. The character of the jungle bordering this part of the river is somewhat different to that along the lower reaches. The Rasau beds grow fewer and at last disappear and the river banks increase in height and are in places covered with dense brakes of fern *(Gleichenia linearis)* and in others with bamboos of different kinds.

At Kuala L'makan, there is a considerable Jakun settlement, all however, on the Johore side of the river, the Jakuns objecting to live on the Pahang side as they say they suffer ill-treatment at the hands of the Pahang Malays. This settlement has been in existence about a year and a half, before which time the families composing it lived some miles higher up at Batu Gajah, but owing to several of their number being killed by tigers they migrated to their present locality. One woman was actually pulled through the bamboo flooring of a hut and carried off by a tiger.

This is the only settlement of those we visited, with the exception of that on the Mas river, where the natives manufacture spear-heads, and other iron articles. They obtain the iron from Malay or Chinese traders and work it up for themselves. and supply the other settlements on the Indan and its tributaries,

The forge used by the Jakuns is very simple in its construction. It consists of a clay basin, about 18 inches in diameter, at one side of which enters a nozzle of hard wood which is connected with a hollow wooden cylinder about four feet long and six or eight inches in diameter in which works a piston and which serves as a bellows.

Having interviewed the Penghulu of the district who was living at this place; and arranged for small "jalors" (dug-outs) in which to carry out the exploration of the smaller streams we spent the evening obtaining "Pantang Kapur" vocabulary.

On the following day Mr. Lake started off early in a small jalor to make a survey of the L'makan river while I accompanied by the plant collector, Mat, and the native surveyor, Pillia, with a theodolite, went up stream to ascend Gunong Janeng with a view to obtain some additional bearings by which to fix the position of the mountain.

Above Kuala L'makan the country gradually becomes more hilly as it rises to the mountain district of which Berembun is the highest point and which includes mount Janeng. After three hours poling I reached the foot of Janeng and commenced the ascent. Near the foot of the mountain I noticed some fine Hibullpalms *(Orania macrocladus).* The whole of the ascent is steep, in parts precipitous for a short distance. The undergrowth on the lower slopes is almost wholly composed of a forest of B'rtam *(Eugeissona tristis)* a very thorny palm, the leaves of which are used for atap. It occurs in considerable quantities right up to the summit.

On the summit, which is about 2,000 feet above sea level, and which I reached in two hours, is a small clearing which was made about 18 months previously by Mr. Lake for the purpose of taking bearings, and as soon as the theodolite arrived I set it up and took one or two bearings but owing to the cloudiness of the weather not very satisfactorily.

From the summit a pretty extensive view can be obtained, including Gunong Blumut and the plain of the Indau Sembrong on the one hand and Gunong Berembuan with the coast line from some distance north of Kuala Rumpa to a little south of Kuala Indau and Pulau Tioman on the other.

Pillai made a "field book" survey of the path followed, and Mat got a good bookfull of specimens. On and near the summit quantities of Daun Payong *(Teysmannia altifrons)*, a large-leaved almost stemless palm, much used by the Jakuns in the construction of their huts were growing; also a species of pandan called 'Jakas' by the Jakuns. I also saw a troop of 'Beroks' *(Macacus nemestrinus)* and at the foot of the hill fresh tracks of elephants. I also heard the cry of an argus pheasant and found one of the dancing grounds of this bird, a small space two or three yards square carefully cleared of all plants, twigs, anddead leaves.

About 2.30 p.m. it commenced to rain heavily and continued all the afternoon and night. On the way back to camp at Kuala L'makan I obtained specimens of the beautiful ground orchid *Arundia speciosa, Bl.,* P'hanyir of the Jakuns.

The lovely dragon fly which in one light reflects the most brilliant peacock blue and in another the brightest of greens, was very common on this part of the river.

The next morning before returning to Kuala Sembrong I saw a Jakun go through the process of producing fire by means of a 'darâk,' or fire stick. He took a piece of bamboo, about 15 inches long and ½ an inch in diameter, into one end of which he fixed, by means of rotan lashing, a small piece of hard wood 2 or 3 inches long and of the same diameter as the bamboo. He then made a small nick in another piece of wood of the same kind as that fixed in the bamboo (in this case an old parang handle was used), which he held firm with his foot and placing the point of wood which was fixed in the bamboo into this nick he twirled the bamboo rapidly between his hands like a drill until the fine dust ground away by the friction was ignited by the heat produced. This tinder was then blown into a flame with some dry leaves.

I reached Kuala Sembrong about 1 p.m., and Mr. Lake arrived from Sungei Mas a few hours later, having explored the L'makan and Mas rivers.

On the latter river are two villages, in one of which Mr. Lake noticed a large tom-tom, consisting of a hollow cylinder of wood, a foot in diameter and about 3 feet long, the ends of which were covered with black monkey skin, also several smaller ones. He also saw some Genggongs, a kind of jew's harp, made of the wood of the 'Lankap' palm, *(Arenga obtusifolia)* and a few apparently disused sumpitans of very inferior workmanship. There was also at this place a forge similar to the L'makan one and bliongs and spear heads are made.

In these villages were several lepers, the disease having been brought, it was said, from the Jakuns of the Rumpen river in Pahang.

The following day (22nd Oct.) Mr. Lake went off in a small jalor to explore the Linggor river, while I remained at Kuala Sembrong in the hope of getting some observations for magnetic variation, but owing to clouds was unable to do so.

Our bird collector Marie having shot a large hornbill, 'hornbill steak' was added to our bill of fare for the day and made a very welcome variation in the daily routine of rice, salt-fish and curry. The flesh of the hornbill, which is almost entirely a fruit eater, is very good eating, steaks off the breast somewhat resembling beef steak. On the 23rd the journey up the Sembrong was commenced. The country here continues of the some low swampy nature as on the lower Indau, and although one or two abandoned clearings were passed, not a sign of a hut or a human being was discovered. There was heavy rain again during the afternoon and at night.

The next morning on the way up stream we met a Jakun, going down in a small jalor, who told us that Che Ma Hassain, the Penghulu of the Kahang district was some distance down stream with a party of his Jakuns collecting rotans, and as we were more or less dependent upon his assistance in getting boats and men we sent a man back with a letter which we had for him.

We reached Kuala Kahang at 9 a.m. and having fixed on a site for a camp set our men to work to construct 'pondoks' or huts, to shelter ourselves and our stores. This work did not take long, as the natives, both Malays and Jakuns, are used to constructing these rude shelters on their journeys through the jungle in search of rotans, etc.

The Kahang is a rapid stream, showing by its current that it takes its rise in the mountains, and contrasting with the Sembrong which, taking its rise and flowing for the greater part of its course through swamps, is very sluggish.

During the day a Chinaman who had come over from the Batu Pahat side passed down the Sembrong, and from him we obtained some information concerning the route, and a little later there arrived a small jalor containing a Dyak, his wife and two children, and a Jakun who were going up the Kahang. From this Dyak we learned that there was a small Dyak settlement near Kuala Madek, a few miles up the Kahang consisting of himself and four or five other Dyaks, who had been there for six years. He told us that the Jakuns now settled at Kuala Madek had come there two years previously from the Lenggu river. The under growth in the near neighbourhood of our camp consisted almost entirely of a small rotan which made bird and plant collecting very difficult work.

As we intended to explore the Kahang, and Madek rivers, the former of which had not previously been ascended by a white man, we sent off some of our men to hunt up small jalors at the villages up stream, in which we could make the ascent of these rivers, and were fortunate in procuring several to select from, and on the 26th October we started.

Mr. Lake went up the Kahang, taking with him a plant collector. This river is, after passing the village of P'niot, quite uninhabited. The jungles through which it flows are, however, the favourite hunting ground for the camphor seekers, especially in the neighbourhood of Bukit B'bap (Jakun—a frog) a hill about 800 feet high and shaped somewhat like an inverted basin.

Rotans are also very abundant, although not of the best kind. Mr. Lake met one party of Jakuns and another of Malays collecting rotans. He also saw several camphor trees. One night the "Bisan Kapur" or spirit of the camphor tree was heard, which the Jakuns declared was a sure sign that there were camphor trees close by and sure enough on search being made the following day trees were found. This "Bisan Kapur" is one of the Cicadas, of which many species abound in the jungle, each one of which makes its own peculiar sound. The Jakuns who were with Mr. Lake secured a fine specimen of a tortoise, called by them "Binku."

After two days continuous hard work, poling and dragging the jalors over fallen trees, the river became extremely narrow and completely overhung with jungle and the surrounding country once more became very swampy. Two more days were spent by Mr. Lake retracing his course to Kuala Kahang he having mapped about twenty miles of the river.

While he was exploring the Kahang I went up the Madek for a short distance to collect such information as was possible about the Jakuns on that river.

A short distance up the Kahang, at Tanjong P'nting, there is a small settlement of Jakuns. The banks of this river rapidly get higher and steeper and the jungle becomes less swampy. On one tree overhanging the river I saw a plant of the fine orchid *Grammatophyllum speciosum* and on many of the trees was growing a large epiphytic pandan called by the Jakuns "pandan lari."

About two houses after leaving Kuala Kahang I passed the mouth of the Madek but, as this river is much encumbered with fallen trees, it was necessary to continue for some miles up the Kahang to a place a little above the large Jakun village called

P'niot, where there is a curious narrow tortuous channel or "trusan" called Kahang Kudun, which connectsthe Madek with the Kahang and is in fact a branch of the former river. It took twenty minutes to pass from the Kahang to the Madek which is a narrow stream much encumbered, as previously stated, with fallen trees. Up this stream I proceeded some miles, when, learning from the Jakun boatmen that there were no more villages further up stream, I decided to return to Kampong P'niot, which I reached about 4 p. m.

This settlement has been in existence about a year, the inhabitants having previously lived at Hulu Madek for six years. It seems that these Jakuns move from place to place in the Indau and Sembong districts, but seldom or never cross over to the western side of the watershed, though one instance of such a migration was met with at Londang on the Hulu Sembrong, but this was an exception. These people settle down in one place, make a clearing and plant hill padi (of which they usually obtain but one crop), "jagong," or maize and plantains, and remain till the ground is pretty well worn out or till they have exhausted the stock of rotans and getah in the neighbouring jungles, when they move to another locality and repeat the same operations. Crocodiles were said to occur in the Kahang river and we saw the grave of a man who had been killed by one a short time previously but we never saw any ourselves.

I remained camped at Kampong P'niot for three days until Mr. Lake's return from Hulu Kahang and spent most of the time collecting "Pantang Kapur" vocabulary. The day after my arrival the "Batin," or head man of the village, Pasooah by name, came down stream from Hulu Madek, where he had been with some of his men looking for rotans. This man is a "Penghulu Kapur," as they call any man who is more clever than others at finding camphor and from him I learned a large number of words. The common wau-wau, or Ungka *(Hylobates albimanus)* was plentiful in the jungle here but no specimens were obtained. The common black lotong *(Semnopithecus obscurus)* was also met with in numbers and I got several specimens. Birds were not very numerous, but one new record for the Malay peninsula, viz., the fork tailed drongo *(Diamus macrocercus)* was secured.

On the 30th October we struck our Kuala Kahang camp and started for Hulu Sembrong. Soon after leaving Kuala Kahang the river narrows up very rapidly and after passing Kuala Harus, daas, is only about fifteen yards wide. For some miles above this point the river is split up into a number of small channels, that which we followed being only a few yards wide, and much overhung with jungle, so that progress was slow. After passing the point where the B'hai separates from the Sembrong the latter becomes deeper and wider again, being as much as thirty or forty yards in width. Here I noticed a number of a nibong-like palm which the jakuns called "Bayas" *(Oncosperma horrida.)* About here too the Rotan S'ntawa, which is so common on the lower reaches of the river, gives place to another species, viz., Rotan Sabut *(Calamus hystrix)*, which is larger leaved, exceedingly thorny and of less value than Rotan S'ntawa.

The next halt was at Kampong S'lieh, a small Jakun settlement with about twenty to thirty inhabitants. They had been at this place only a few months, some having come from Tanjong P'nting and some from Hulu Sembrong. They had made a large clearing planted with tapioca, sugarcane, and pineapples and a small quantity of tobacco, apparently in a flourishing condition. A tiger, or tigers, had visited this village a few days before our arrival and carried off several dogs.

On the following day (31st October) the journey up stream was continued. Very soon the river again split up into innumerable narrow channels flowing through thick swampy jungle scarcely raised above the level of the river. In many places there was only just sufficient room for the boats to pass between the overhanging foliage, and a sharp look out had to be kept for the ever ready "onak," as the long projecing well armed shoots of the rotan are called. The large buff-breasted, orange-billed Kingfisher *(Pelargopsis Malaccensis)* here usurps the place of the Black-capped Kingfisher *(Halcyon pileata)* which holds sway over the finny denizens of the lower waters, while the little Kingfisher *(Alcedo ispida)*, the same species which occurs in England, lives apparently on the best of terms with both.

At one place it was necessary to cut through a newly fallen tree which lay across the river.

During the day we passed the mouth of the S'lai, which can be ascended, it is said, for three or four days in large jalors. The source of this river is in the hills near Hulu Indau and there is in that district a considerable Jakun settlement.

About an hour after passing the S'lai all the small channels reunited and the river once more became of a respectable size at Kuala Tamok. There is a Jakun settlement a short distance up this river. From this point there is a succession of beautiful reaches, each several hundred yards long and 60 to 70 yards wide, and the neighbouring country becomes more hilly; then comes a chain of "Palohs" or lagoon like expansions of the river, each several hundred yards long and 100 to 250 yards wide. These Palohs are full of Rasau Bakong (*Susum anthelminticum*) and other swamp plants, and have a very picturesque appearance. After an hour and a half of easy and rapid progress through these fine open reaches the channel suddenly narrowed for a short distance to three or four yards and then widened out again, and soon the fine open reach at Pengalen Panau, where a Chinaman and a few Jakuns live, was reached.

Here a short halt was made to talk to Inche Krani, a Penghulu who was collecting specimens of Damar, woods, &c., for the Chicago exhibition.

About half an hour after leaving this place the river once more became a labyrinth of narrow channels which it took us two hours and a half to traverse and then we came to the last open reach just below Londang, where we camped for the night.

This place is the head quarters of the Penghulu, Che Ma Dajang, and there had been here a considerable Jakun settlement but some months previously they migrated to the Batu Pahat Sembrong on the western side of the watershed.

The only animals noticed during this part of the journey were black lotongs, which are very common in these jungles, and a few birds, including a small parrot (*Psittacus incertus*) and a Drongo called by the Jakuns "T'ntong," from its note which consists of the syllables "T'ntong" in falling cadence; some hornbills were also seen. The next day (1st Nov.) we continued our journey up stream. The river is very narrow from here up to its source and consists of a net work of "trusan" or narrow channels, meandering through a flat swampy country in which the fine pandan called by the Jakuns Mengkuang tikar (*Pandanus furcatus*) and which is used for making kajangs, &c., grows plentifully. This pandan attains a height of 20 or 30 feet and its leaves are 10 to 15 feet in length and three or four inches wide. There was also a quantity of a palm resembling B'rtam and called by the Jakuns K'lûbi *(Zalacca Sp.)* It has an acid fruit about the size of a pinang nut but round and of a reddish colour which can he eaten when boiled, according to the natives' account.

About noon the survey trace of the proposed railway from Johor Bahru was crossed at a point 57 miles from that town, and about half an hour afterwards, just below Pengkalan Repoh, the shallowness of the river and a fallen tree put a stop to our further progress. Only the very smallest jalors can proceed some little distance beyond this point, where the river is only 10 or 12 feet wide. A few Jakuns were camped at this place having come from Simpai, on the Batu Pahat Sembrong, to fish.

The next two days were occupied in transporting all our baggage across the five miles which separates Pengkalan Repoh from Kampong Simpai, the highest navigable point on the Batu Pahat Sembrong.

About two hours after leaving camp Mr. Lake and I, who went first, reached the point on the Panggong mentioned by Mr. Hervey in his account of the Indau and its tributaries, where that stream bifurcates, one portion flowing to the north west and becoming the Klambu, which unites with the Simpai to form the Batu Pahat Sembrong, the other flowing north east to join the M'l'ther.

Another hour and a half's tramping through the jungle, along the well-worn footpath which forms the highway between the eastern and western Sembrongs, brought us to Simpai. At this place are settled a few Malays and a considerable number of Jakuns. As it was uncertain whether boats would be at once procurable in which to proceed to Batu Pahat, a 'pondok' was built and a camp established on the river bank. In the evening I shot a specimen of the red flying squirrel (*Pteromys oral*): it was espied by one of the Jakuns, running up a tree close to the camp, and pointed out to me. A few new Pantang Kapur words were added to the vocabulary at this place.

The last of the baggage did not arrrive till the afternoon of the 3rd Nov. and Che Ma Hassain did not leave us till he saw everything brought into camp. The conduct of this Penghulu cannot be too highly spoken of. All the Malay Penghulus and headmen with whom we had any dealings were with one or two exceptions most civil and obliging, giving every assistance in the way of men and boats, but Che Ma Hassain surpassed them all, coming much further than his duty required in order to save us trouble with the men and to see that we had every facility for carrying out our plans. In manners and bearing he was a perfect gentleman. Leaving our plant and bird collectors at Simpai, we started on the 4th Nov. down stream in two medium-sized jalors and after two hours poling reached Cheh Cheh where we changed into a large jalor. On our way we saw a fine specimen of the banded viper *(Bungarus fasciatus)* in a hole in the bank. On an attempt being made to kill it, it took to the water and by diving escaped. Just after leaving Cheh I shot a specimen of the beautiful little dark purple kingfisher *(Alcedo meninting)* and shortly afterwards two specimens of a curious and very prettily coloured fringed lizard.

The jungle gradually became more and more swampy as we proceeded, until we reached a part where for miles the forest bordering the river grows apparently in the water, there being scarcely any dry ground visible. There appeared to be a good many orchids in this place; then comes a stretch of Rasau swamps and here we noticed the Kinta weed *(Vanda Hookeriana).* Later on we passed through swampy padangs, where the grass brushed our boat on each side and at dusk we stopped at the only bit of dry ground we could find to cook our supper and intended to spend the night there, but the mosquitoes were so bad that the boat men, although they had a long day's work, preferred to go on and work all night. Presently, however, we met the rising tide, which was so strong that we tied up to the bank for some hours and did not proceed till it turned again, when we slid easily down stream to Batu Pahat, which we reached about 5 a.m.

We remained at Batu Pahat for some days and took some observations from the hills, from which good views of Ophir, the Berembun group, Blumut, Pantie, Mintahak, and Pulai, were obtained. While at Batu Pahat specimens of some good birds were obtained, including the small hornbill *(Anorrhinus galeritus.)* and the curious Timaline bird *(Eupetes macrocercus)*. At the Batu at the mouth of the river, the rocks (granite) are covered in many places with orchids, the most conspicuous being the Spider Orchid *(Renanthera Maingayi)*. Just outside the mouth of the river is a small rocky islet on which is a settlement of "Orang Laut," who live by fishing and making blachang. Their huts are built on the bare rock and look as if the first gale would blow them all away. On this islet is a piggery which might well be taken as a model by keepers of that useful animal. The stys are built on piles over the water and kept perfectly clean and sweet by being thoroughly washed out daily with sea water. The pigs are fed almost entirely on Sago refuse.

During the whole trip we had very wet and cloudy weather, which made collecting difficult and rendered almost hopeless any attempts at astronomical observations. From a natural history point of view the country is fairly interesting. The larger Mammals are not met with unless special search is made for them. Traces of Elephant, Tiger, Deer, and Pig were met with, but S'ladang do not appear to inhabit this part of Johor, at least we saw and heard nothing of them. Birds were fairly plentiful, but, as is usually the case in the Malayan jungles, had to be hunted for. Butterflies were scarce, very few being observed and only a very few captured.

Owing to the main object in view being the survey of the rivers, collecting had to be chiefly confined to the jungle immediately adjoining their banks and probably many places which did not prove very productive to us might yield a good harvest to a collector who could squat for a time and thoroughly rummage the neighbourhood. The Hulu Indau and the Kahang rivers looked more promising.

The Jakuns, or "Orang Hulu," as they prefer to be called, met with in the Indau and Sembrong districts are of two types, one with fine features and straight hair, and the other with thick negro features and curly, almost woolly, hair. These two types are met with intermixed in most of the villages, together with every gradation between the two. On the Mas river most of the inhabitants were of the fine featured race, while at Kampong P'niot, on the Kahang, good examples of both extremes were observed. Their height is from four to five feet only but they are pretty well developed and capable of enduring a considerable amount of fatigue. The Sumpitan, or blow pipe, does not appear to be used in these districts, the only weapons being spears, b'liongs, and parangs, and S'rampangs for spearing fish. The Labu, a large pear shaped gourd about nine inches in diameter, is used as a vessel for holding water.

The houses of these interesting people are built on thin poles, ten or twelve feet high, near the bank of a river. The floors are of lantai, (split nibong) or split bamboo, over which are spread mats made of mengkuang; the roof and walls are of atap, Daun Payong (*Teysmannia altifrons*) or occasionally Kajang. I noticed one house at Kampong P'niot the walls of which were of bark. Two or more, up to as many as five or six families, live in one house, according to its size. The portions allotted to each family being not at all, or only partially screened off with mats, from each other. All cooking is done in the huts, the smoke escaping as best it can through the numerous interstices of the walls and roof. The fire place consists of an oblong frame work or shallow box of wood about thirty inches by eighteen inches and some four or five inches deep, filled with earth, on the top of which are placed three good sized stones to support the cooking pots. All the Jakuns, men and women, chew sirih and tobacco, of the latter they are especially fond. When they cannot obtain such leaf they use the bark of a root called "kallong" as a substitute. This root is slightly astringent and has somewhat the same flavour as sirih. Each man carries his supply of betel-nut, sireh (or kauong), tobacco, and lime in a small wallet made of pandan and never goes anywhere without these—to a Jakun —almost 'necessaries of life.'

The clothing worn by both sexes is scanty, consisting for the men of a pair of loose short trousers or a sarong, and for the women of a sarong fastened at the waist. Some of them have adopted the Malay "baju," or loose jacket, and some wear the head cloth. Cats and dogs are found in all the villages, the former in every house and sometimes two or three in one house. They are of various colours, black, white, grey, or combinations of these colours. The dog are mostly small with sharp noses and prick ears. Some are white and yellow, others black, or black and white.

Lists of the animals and plants collected or observed are appended.

H. J. K.

List of Mammals collected (*) or observed during trip.

Hylobates albimanus, Vig. Horsf.

The common black Wau Wau. This species was fairly plentiful everywhere on the Indau and Sembrong rivers. It always goes in small troops.

Macacus nemestrinus, Linn.

The 'Berok' was observed only on Gunong Janeng.

Macacus Cynomolgus, Schreb.

The Mangrove Monkey. Common in the low lands near the coast and up the rivers for a considerable distance.

**Semnopithecus obscurus*, Reid.

The Dusky Lotong. This species is very nearly black in Johor. Several specimens were obtained. Common everywhere in the inland districts.

Felis tigris, Linn.

Reported to be plentiful everywhere, especially on the Indau and at Batu Pahat.

Lutra leptonyx, Gray.

M. Knox, of Batu Pahat, shewed us the skin of an otter which had been shot close to his house.

Pteropus edulis, Gray.

I only saw a single specimen of this large fruit bat, at Kuala Kabang. It is probably common.

**Pteromys oral*, Tick.

Red flying squirrel. One specimen obtained at Simpai, on the Batu Pahat Sembrong.

**Sciurus bicolor*, Sparrm.

This squirrel, which is common in Johor, is here of a dirty yellowish white colour, somewhat darker on the back. Specimens were obtained at Kuala Sembrong and Batu Pahat.

Sciurus notatus, Bodd.

This pretty little squirrel is common everywhere.

Sciurus tenuis, Horsf.

Fairly common. The smallest of the Malayan squirrels.

Elephas maximus, Lam.

The elephant appears to be common throughout Johor. Tracks were seen in many places on the Indau, and also on the Sembrong, near P'ngkalan Repoh especially.

Cervus equinus, Cuv.

Tracks of the Sambhur were seen on Gunong Janeng This deer is probably common in the Johore jungles, but owing to its shy nature is seldom seen.

H. J. K.

List of Birds collected (*) or observed during trip across Johore.

Accipiter virgatus, Temm.
**Spizaetus caligatus* Raffl. Kuala Sembrong (Indau).
**Spilornis bacha*, Daud. Kuala Sembrong (Indau).
**Microhierax fringillarius*, Drap. Batu Pahat.
Corone macrorhyncha, Wagl. Kuala Indau.
Corone enca, Horsf.
Oriolus indicus, Jerd. Batu Pahat.
Dissemurus platurus, Vieill.
**Buchanga atra*, Herm. Kahang river.
**Rhipidura perlata*, S. Müll.
**Terpsiphone affinis*, Hay. Kuala Sembrong (Indau).
**Terpsiphone princeps*, Temm. Kuala Sembrong (Indau).
**Philentoma pyrrhopterum*, Temm.
**Chloropsis osterops*, Vigors.
**Chl icterocephala*, Less.
**Chl. cyanopogon*, Temm.
**Criniger phaeocephalus*, Hartl.
Pycnonotus analis, Horsf. Kuala Indau.
P. plumosus, Blyth.
Copsychus musicus, Raffl. Simpai, Batu Pahat, etc.
**Eupetes macrocercus*, Temm. Batu Pahat.
Turdinus abotti, Blyth.
**T. magnirostris*, Moore.
**Malacopteum magnum*, Eyton.
**M. affine*, Blyth.
**Miscornis gularis*, Raffl. Kuala Sembrong (Indau).

**Macronus ptilosus*, Sard and Selb.
Lanius cristatus, Linn. Kuala Indau.
**L. lucionensis*, Linn.
Aethopyga siparaja, Raffl. Batu Pahat.
**Arachnothera affinis*, Horsf.
Anthothreptes Malaccensis, Scop. Batu Pahat, &c.
**Chalcophana singalensis*, Gm.
Prionochilus percussus, Temm. Batu Pahat.
**P. maculatus*, Temm.
Hirundo javanica, Sparrm. Batu Pahat, &c.
Anthus rufulus, Vieill. Batu Pahat, &c.
Mainatus javanensis, Osb. Kuala Indau.
Calornis chalybea, Horsf. Kuala Indau. Batu Pahat.
Calyptomena viridis, Raffl. River Indau.
**Corydon Sumatranus*, Raffl. Kahang river.
**Cymborrhynchus macrorhynchus*, Gm.
**Tachornis infumata*, Sch.
**Macropteryx comatus*, Temm. Kahang river.
**Lyncornis temminckii*, Gould. Kuala Kahang.
**Eurystomus orientalis*, Linn. Kuala Sembrong (Indau).
**Merops philippinus*, Linn. Batu Pahat.
**Nyctiornis amicta*, Temm.
**Pelargopsis Malaccensis*, Sharpe. Sembrong rivers.
Alcedo ispida, Linn. On all the rivers.
**A. Meninting*, Horsf. Cheh-Cheh.
**Halcyon pileatus*, Bodd. Indau river.
**Buceros rhinoceros*, Linn. Indau river, Batu Pahat &c.
Anthracoceros convexus, Temm. Indau river.
**Anorrhinus galeritus*, Temm. Batu Pahat.
**Harpactes kasumba*, Raffl. Kuala Kahang.
**Harpactes durancetti*, Temm. Kuala Kahang.
**Chrysophlegma humei*, Hargitt.
**Gauropicoides rafflesi*, Vig. Kuala Madek.
**Meiglyptes grammithorax*, Malh.
**Meiglyptes tukki*, Less.
**Thriponax javensis*, Horsf. Sembrong (Batu Pahat.)
**Calorhamphus hayi*, Gray.
**Cuculus striatus*, Drap.
**Zanclostomus javanicus*, Horsf.
**Rhopodites diardi*, Less.

Palaeornis longicauda, Bodd.
**Psittinus incertus*, Shaw. Sembrong river, &c.
**Osmotreron olax*, Temm.
Carpophaga aenea, Linn. Sembrong river, &c.
Pavo muticus, Linn. Kuala Sembrong (Indau).
Argus giganteus, Temm. Gunong Janeng.
Gallus ferrugineus, Gm. Kuala Sembrong (Indau.)
Gallinago sthenura, Kuhl. Kuala Indau.
Numenius arquata, Linn. Batu Pahat.
Herodias garzetta, Linn. Batu Pahat.
Ardea Sumatrana, Raffl. Tanjong Tengaroh.
**Butorides javanica*, Horsf. Sembrong and Indau rivers.

H. J. K.

Part II. Topography and Geology.

(*a*). THE INDAU RIVER.—

This river has been described in a previous number of this Journal; I will therefore only deal with two of its tributaries not previously explored, viz., the Mas and the Lĕmakan rivers.

SUNGEI MAS.—

The source of this river lies in some low hills to the west of the Indau; the stream, after pursuing a E. N. E. course, empties itself into the upper Indau, eleven miles above Kuala Sembrong. Total length of river about twenty-five miles.

The Mas is very shallow and can only be ascended in small canoes. Six and a half miles up stream there is a Jakun village consisting of three large huts with about twenty-five inhabitants under a Jeroh Kerah. Two and a half miles further there is a larger settlement of fifty to sixty people, under a Batin. Most of the aborigines are engaged in rotan and getah collecting, they also plant tapioca and Indian corn (jagong)

There were *several* cases of leprosy here.

SUNGEI LEMAKAN.—

This a small river having its source amongst the southern spurs of Mount Janeng; its general course is north easterly. Total length about nine miles. It joins the Upper Indau twenty-four miles above Kuala Sembrong. The stream is shallow and sandy, the banks are high and consist of clays and clay shales. At the Kuala there is a large clearing, occupied by about forty Jakuns; these people lived formerly at Batu Gajah, a few miles further up the Indau. They plant padi at Lĕmaku, but are chiefly engaged in collecting jungle produce. They appear to be a very thrifty and hard-working people.

(b.) THE INDAU SEMBRONG RIVER.—

This river is a tributary of the Indau, joining it at a distance of thirty miles from the China Sea, in Lat. 2° 25' 50" N. and Long. 103° 36' 45" E.

At the mouth the Indau Sembrong is about seventy-five yards wide. There is a Johore Government Station and a few Malay houses. There are some extensive clearings on the right bank, where the Penghulu of the district lives; several families from Pahang have lately settled here. At one and three quarter miles up stream the Linggor, a large tributary, flows in on the right bank; the course of this stream is north westerly, the mouth is about twenty-five yards wide, the stream sluggish, but deep, and the banks low and swampy. The source of the Linggor is said to be to the South, in the Blumut range. Ten miles from the mouth there is a small Jakun settlement.

Kuala Kahang is about twenty-four miles further up stream. This river is described in section *(d)*

A large steam launch could run up as far as Kuala Kahang, the river being wide, deep, and tidal. Beyond this point, however, it narrows very considerably owing, in a great measure to the stream splitting up into a number of small channels; the chief of these is known as Harus Dras, and forms a loop nearly five miles long.

At Sungei Selieh the river widens again. The Selieh is a stream flowing from the south; the source is about two days journey inland. At the Kuala there is a small Jakun village with twenty-five inhabitants; from here a path leads to Hulu Kahang, one day's journey.

Beyond Selieh the river becomes very narrow, then suddenly opens out into a series of lagoons connected by narrow channels overgrown with "rasau." In the midst of these lagoons rise the two hills "Parit" and "Jakas," each about 400 feet high. The surrounding country is very swampy.

Sungei Sĕlai is a large tributary stream, joining the main river fourteen and a half miles above Kuala Kahang. The source is in Gunong Sĕlai, in the Tenang Hills; the course is southerly; the river is navigable by large canoes for over two thirds of its length. Near the source is a Jakun village of some fifty inhabitants, with a "Batin," who is under the Penghulu of Batu Pahat. From this village a path leads to the Bekok river, three days' journey.

Kuala Sungei Tamok is a little beyond Kuala Sĕlai; it is a small stream flowing from the north. Near the Kuala is a settlement of some fifty Jakuns.

At Pengkalan Panau, on the right bank of the Sembrong, twenty miles from the Kuala Kahang, there is a Chinese trader and a few Malays; near this place also is the Jakun settlement of Umbong, consisting of five huts on a large clearing. Beyond this the river winds through swampy country until Londang is reached, forty seven miles above the Government station at Kuala Sembrong; here the Penghulu of the districts, Che Ma'Dagang, lives, with a few Malays.

(*c.*) THE SOURCE OF THE INDAU AND BATU PAHAT SEMBRONGS.—

A short distance beyond the village of Londang the Sembrong looses its individuality entirely; two streams, the Paloh and Mĕlĕtir, uniting to form the main river.

The source of the Paloh lies about one and a half days' journey to the north westward, towards the Bekok river.

The Mĕlĕtir rises in a small hill a few miles south west of Pengkalan Repoh; from this last named spot a path leads over flat country to the Jakun village of Simpai, on the Batu Pahat Sembrong, a distance of five and a half miles.

At two miles from Pengkalan Repoh the Panggong, a small stream rising in a swamp to the south east, bifurcates, one half meandering through a swamp and eventually draining into the Mĕlĕtir, by a number of small channels; the other half, called by the Jakuns the Kĕlambu, flows briskly south westward, uniting with the Simpai stream to form the Batu Pahat Sembrong.

Theoretically, therefore, the two Sembrongs have a common source, and the southern portion of Johore Territory is an island. Practically, however, the Panggong contributes a very small proportion to the volume of the Indau Sembrong, being only a minor tributary of the Mĕlĕtir.

As regards the Batu Pahat Sembrong the Panggong plays a more important part, as, with the Sempai stream, it forms the actual source of that river.

The country from Londang to the Kĕlambu is exceedingly swampy, with here and there a little solid, but not hilly, ground. It is uninhabited save by wandering parties of Jakuns.

The Mĕlĕtir is navigable, with difficulty, by moderately large canoes, as far as Repoh; the Kĕlambu is not navigable above the Simpai junction. A little deepening and clearing of fallen timber would, however, render both these rivers easily navigable, so that a shallow canal of about one and a half miles in length through soft, flat country, would connect the two Sembrongs and form a continuous waterway for canoes from the China sea to the Straits of Malacca, a river distance of about 150 miles.

The railway trace runs across this swampy country.

(*d.*) THE KAHANG RIVER.—

This river, the largest tributary of the Indau Sembrong, takes its rise at the foot of Gunong Bechuak, in the Blumut range. It pursues a north, north easterly course, and empties itself into the Sembrong twenty-four miles above the mouth of that river. At the Kuala the Kahang is about twenty yards wide. For fifteen or twenty miles the river is fairly free from obstructions in the shape of fallen timber and shallows; past this point, however, it is navigable only by small canoes.

Near Kuala Kahang is a mixed Dyak and Jakun village, in a clearing on the right bank; the Dyaks, about ten in number, came in from Sarawak some years ago, they are engaged in planting padi and collecting jungle produce. Four miles above the Kuala the Madik river joins the main stream; this river rises in some low hills distant about twenty-five miles to the south its banks are at present uninhabited. Small canoes can go up almost to the source, from whence a path leads to the Johore river.

Two miles above Kuala Madik is a Jakun village called P'niot; here are eight or nine huts with about forty inhabitants. The Kahang is much frequented by Jakun and Malay rotan collectors; the rotan although very abundant is not of first quality.

Camphor trees are found in the neighbourhood of Bukit Bĕbap near the Hulu (*i. e.* source). Gutta is also fairly plentiful.

The geology of the Kahang is very similar to that of the Serting and Gemeh rivers—a country of clays and clay shales, with here and there traces of a sandstone formation lying in almost horizontal strata about eight feet below the clays. Besides this sandstone there are a few out-cropping masses of a very hard compact green quartzy felsite.

I found no traces of alluvial gold or of tin ore here.

(*e.*) THE SEMBRONG BATU PAHAT.—

Under this section I propose dealing with the upper portion only of the Sembang Kanan or right fork of the Batu Pahat river, usually known as the Batu Pahat Sembrong.

The Sempang Kiri, or left fork, and the Bekok, a big tributary of the right fork, are thickly settled with Chinese engaged in gambir and pepper cultivation. This country was surveyed by the Datu Luar of Johore some time ago.

As before stated, the Batu Pahat Sembrong is formed by the junction of the Simpai and the Kĕlambu (Panggong). A little below this junction is the Jakun village of Simpai, numbering about thirty-five inhabitants; below this in close succession along the banks of the river come the villages of Rukam, Merepoh, and Cheh-Cheh, all inhabited by Jakuns, the two former with about seventy-five and fifty people respectively.

There is a Chinese gambir plantation near Rukam. At Cheh-Cheh, which is about four miles below Simpai, are three or four Malay and a Chinese trader, with some thirty to forty Jakuns. Cheh-Cheh is the centre of the rotan trade.

Beyond Cheh-Cheh the stream winds through miles of swamp, with here and there patches of high ground taken up by Chinese gambir and pepper planters, with occasionally large "Kankars" or Chinese villages, each inhabited by several hundred men. The river, although deep and navigable by large sampans and canoes, is very narrow until Kuala Bekok is reached, a distance of about twenty miles from Simpai; from thence to Kuala Batu Pahat (seventeen miles further) trading steamers ply daily.

(*f.*) THE BATU PAHAT HILLS.—

This small group of hills lies on the east side of the Batu Pahat river, close to the Kuala.

Mount Formosa is the principal elevation, about 1400 feet above sea level; it forms a prominent land mark for sailors north east of it; and distant about one mile is Gunong Penggaram, about 1150 feet high. From the summit of Penggaram, Mount Ophir, Blumut, and Pulai are distinctly visible; seawards the country is flat with much mangrove swamp.

On the slopes of Formosa and Penggaram are several coffee estates, under European management. A cart road leads to Pengkalan Penggaram on the river.

Geology of the Batu Pahat Hills.—The bed rock is a very hard fine-grained granite, which crops out here and there on the hill side, is overlaid by the usual clays and clay shales.

There is a little alluvial tin ore in the valley between Formosa and Penggaram; this was formerly worked by Chinese, but is now abandoned; it is of little importance at present.

HARRY LAKE,

Johore, December 22nd, 1892.

List of plants collected.

Menispermaceæ.

Fibraurea chloroleuca, Miers. Sungei, Hulu Sembrong.

Limacia Kunstleri, King. Kuala Sembrong.

Dilleniaceæ.

Wormia suffruticosa, Griff. Kwala Sedili Besar.

Anonaceæ.

Goniothalamus macrophyllus, Hook. Simpai, Ulu Batu Pahat, and Gunong Janeng, where it is called "Sajur Wah."

G. giganteus, Hook. "Galang Hutan," at Kwala Sembrong.

Polyalthia Beccarii, King. "Buah Lara Merak." Kwala Sembrong. "Lara" is a common Malay name for many species of anonaceous plants.

Unona discolor, Vahl. "Akar Darah." Kwala Sembrong.

U. dasymaschala, Bl. Tanah Abang, Gunong Janeng, and Kwala Sembrong.

Popowia nervifolia, Maing. "Pasa Achong." Gunong Janeng.

Mitrephora macrophylla, Oliver. Kwala Kahang.

Nympheaceæ.

Barclaya Motleyana, Hook. "Daun Kalapa," at Sungei Malitil. This very curious jungle water lily seems by no means uncommon. It grows in shallow streams in the denser parts of the forest, mixed up with an aquatic aroid, *Cryptocoryne*, sp. which it so much resembles when out of flower that it is very easily overlooked. The flowers are dull reddish and not at all conspicuous.

Violaceæ.

Neckia humilis, Hook. Gunong Janeng. I have recently met with this on Gunong Panti, also growing on banks at about 2,000 feet altitude.

Alsodeia Kunstleriana, King. Gunong Janeng.

A Scortechinii, King. Simpai Hulu Batu Pahat.

Bixineæ.

Flacourtia Rukam, Zoll and Mor. Kuala Sembrong. This is the broad-leaved wild Rukam tree, the species commonly known here as Rukum is *F. Cataphracta*, Roxb, which I have never seen really wild.

Pittosporeæ.

Pittosporum ferrugineum, Ait. Hulu Batu Pahat.

Polygaleæ.

Salomonia aphylla, Griff. Batu Pahat.

Guttiferæ.

Calophyllum Wallichianum, Planch. Kwala Sembrong.

Kayea eugeniifolia, Pierre? Kwala Sembrong.

Ternstroemiaceæ.

Gordonia excelsa, Br. Kwala Kahang.

Adinandra acuminata, Korth. Kampong Chin-chin.

Sterculiaceæ.

Commersonia platyphylla, Andr. Kwala Sembrong.

Tiliaceæ.

Elæocarpus paniculatus, Wall. Kwala Sembrong, Hulu Sembrong.

E. robustus, Roxb. Sungei Kahang.

Dipterocarpeæ.

Vatica, sp. A species with very small white flowers. Kwala Sembrong.

Pachynocarpus Wallichii, King. "Petaling Ayer," "Medang Pasir," Kwala Sembrong.

Rutaceæ.

Glycosmis sapindoides, Lindl. Bukit Murdom.

Gl. sp., near *pentaphylla*, but with much larger leaves. Flowers white and pink. Kwala Sembrong.

Luvunga scandens, Ham. "Buah Keping Akar," Sungei Sembrong.

Atalantia monophylla, Corr. Kwala Batu Pahat.

Ochnaceæ.

Gomphia sumatrana, Jack. Kwala Batu Pahat.

Meliaceæ.

Chisocheton penduliflorus, Planch. Simpai.

Aglaia paniculata, Hiern. Simpai.

A. minutiflora, Bedd. Bukit Tana Abang.

Olacineæ.

Gomphandra, sp. Simpai, Kwala Sembrong.

Ctenolophon parvifolius, Oliver. Hulu Batu Pahat.

Sapindaceæ.

Erioglossum edule, Bl. "Poko Kelat." Kwala Batu Pahat.

Ampelideæ.

Cissus diffusa, Planch. Kwala Kahang.

Pterisanthes caudigera, Miq. Hulu Sembrong.

Anacardiaceæ.

Buchanania acuminata, Turcz. Hulu Kahang.

Connaraceæ.

Rourea fulgens, Wall. Kwala Kahang.

Connarus grandis, Jack. "Akar Chin-Chin." Hulu Sembrong

Leguminosæ.

Millettia sericea, Warn. "Akar Mumboll." Kwala Sembrong

Uraria crinita, Desv. "Pua Acoraging." Kwala Sembrong

Pithecolobium contortum, Mart. Bukit Murden.

P. sp. Not in the Flora of British India. Kwala Sembrong; used for making soap.

P. fasciculatum, Benth. "Kachang Tupai." Kwala Sembrong.

Myrtaceæ.

Eugenia Zeylanica, Wight. Kwala Sembrong.

E. leptantha var? A variety apparently ot this species, with very thick leaves. Gunong Janeng.

Barringtonia acutangula, Gaertn. Kwala Sembrong.

Melastomaceæ.

Senerila heterophylla, Jack. Simpai.

S. sp. nov. Gunong Janeng.

Blastus borneensis, Cogn. Gunong Janeng.

Allomorphia near Griffithii, "Kakapal Umu." Gunong Janeng.

Marumia verrucosa, Cogn. "Akar Salan Hutan." Kwala Sembrong.

M. nemorosa, Blume. Kwala Sembrong.

Memecylon coeruleum, Jack. Hulu Sedili.

Medinilla rubicunda, Bl. Kwala Kahang.

Pternandra, sp. Kwala Kahang.

Phyllagathis rotundifolia, Miq. Simpai.

Rhizophoreæ.

Carallia integerrima, Del. "Merpain" Hulu Kahang.

Saxifragaceæ.

Polyosma, sp. Hulu Kahang.

Samydaceæ.

Homalium sp. "Mensarah putih" Poko Ayer Anjing. Kwala Sembrong; Ulu Kahang.

Cucurbitaceæ.

Trichosanthes celebica, Cogn. Apparently this species, which has only hitherto been met with in Celebes. Bukit Murdom.

Araliaceæ.

Aralidium pinneatifidum, Miq. Bukit Murdom.

Rubiaceæ.

Sarcocephalus subditus, Miq. "Sakir Damat" Gunong Janeng.
Argostemma ophirense, *C. B. C.* Gunong Janeng.
A. spinulosum, *C. B. C.?* Gunong Janeng.
Hedyotis congesta, Br. Kwala Sembrong.
H. sp. A scandent herb. Kwala Batu Pahat.
Gardenia tubifera, Wall. "Koping Ayer." Kwala Sembrong.
G. tentaculifera, Hook. Hulu Kahang.
Urophyllum hirsutum, Bl. Simpai.
Lucinea morinda, Jack. Simpai.
Randia fasciculata, D. and C. "Akar Duri." Kwala Kahang.
Canthium didymum, Miq. Bukit Tana Abang.
Diplospora, sp. Kwala Kahang.
Ixora parviflora, Vahl? Gunong Janeng.
I. pendula, Jack. "Saratong Padi." Kwala Sembrong.
I. fulgens, Roxb. Kwala Kahang.
Lecananthus erubescens, Jack. "Poko Datoh Rajah" Sungei Malitil.
Prismatomeris albidiflora, Thw. Kwala Batu Pahat.
Psychotria Helferiana, Kurz. Simpai.
P. polycarpa, Miq. Kwala Sembrong.
P. sarmentosa, Blume. Kwala Kahang.
Chasalia curviflora, Thw. Kwala Kahang, Kwala Sembrong.
Poederia foetida, L. Sungei Hulu Sembrong.
Cephaelis Griffithii, Hook. Hulu Sembrong.

Compositæ.

Vernonia scandens, L. Bukit Murdom.

Myrsineæ.

Moesa ramentacea, L. Bukit Murdom.
M. indica, L. Kwala Batu Pahat.
Ardisia villosa, Roxb. Simpai.
A. colorata, Roxb. Kwala Kahang.
A. colorata, var? With the panicle, petioles, branches and back of leaves covered with a red tomentum. Simpai, Hulu Batu Pahat.

A. crassa, C. B. Clarke. Sungei Hulu Sembrong.

A. sp. Apparently undescribed; with ovate petioled serrate leaves, and large pink fruits. Flowers not seen. Gunong Janeng. (I also collected this on Gunong Panti.)

Loganiaceæ.

Fagrea racemosa, Jack. Kwala Sembrong.

Oleaceæ.

Olea maritima, Wall. Kwala Batu Pahat.

Jasminum subtriplinerve, Bl. Kwala Kahang, Kwala Sembrong.

J. pubescens, Bl. Kwala Sembrong.

Apocynaceæ.

Tabernœmontana malacccensis, Hook. Simpai.

Kopsia, sp. Kwala Kahang. (The same species that occurs in Singapore.)

Kopsia, sp. with sessile leaves. Kwala Kahang.

K. near *K. arborea*, "Bankoo." Sungei Hulu Sembrong.

Asclepiadeæ.

Tylophora tenuis, Bl. "Akar Saput Tungal." Sungei Hulu Sembrong.

Hoya coronaria, Bl. Sungei Hulu Sembrong.

Dischidia hirsuta, Bl. Kwala Kahang.

Cyrtandreæ.

Didymocarpus platypus, C. B. Clarke. Bukit Murdom, Simpai.

D. heterophylla, Ridl? Gunong Janeng.

D. sp. Gunong Janeng.

Cyrtandra, sp. Bukit Tanah Abang.

Aeschynanthus Wallichii, Lindl. Simpai.

Solanaceæ.

Solanum nigrum, L. "Trong Parachichit" Bukit Murdom.

Convolvulaceæ.

Erycibe Princei, Hook. "Akar Sakijang." Kwala Sembrong.

Lettsomia maingayi, Hook. Kampong Chin-Chin, Ulu Batu Pahat.

Boragineæ.

Tournefortia Wallichii, Dec. Bukit Murdom.

Acanthaceæ.

Lepidagathis longifolia, Wight. Kampong Chin-Chin.

Ebermaiera. Near *E. longifolia*, but differing in its broader leaves and less hairy bracts. Gunong Janeng. (I collected this on the Tahan river, Pahang).

Justicia gendarusa, L. Simpai.

Hemigraphis confinis, Anderss. Kwala Kahang

Rungia, sp. Kwala Sembrong.

Scrophularineæ.

Ilysanthes hyssopioides, Benth. Kwala Kahang.

Verbenaceæ.

Clerodendrum, sp. This is near *C. fistulosum*, Becc, a Bornean plant, with white flowers, remarkable for having (as this species also has) the stem swollen between the joints and inhabited by ants. This species differs in having orange-red flowers arranged in a raceme, and petioled leaves. Kampong Chin-Chin. (I met with this once in a wood at Choa Chu Kang in Singapore.)

Labiatæ.

Dysophylla auricularia, L. Kwala Kahang.

Aristolochiaceæ.

Thottea grandiflora, Rottb. Bukit Murdom.

Piperaceæ.

Piper stylosum, Miq. Simpai.

P. caninum, L. Kwala Sembrong.

Myristicaceæ.

Myristica Missionis, Heyne. Chin-Chin, Kwala Sembrong.

M. oblongifolia, King. Bukit Tana Abang.

Laurineæ.

Cryptocarya Griffithiana, Hook. Simpai.

Proteaceæ.

Helicia robusta, Wall. "Putat Topi." Bukit Tana Abang.

Loranthaceæ.

Loranthus retusus, Jack. Bukit Murdom.

L. formosus, Bl. Sungei Hulu Sebrong.

Santalaceæ.

Champereia Griffithiana, Planch. Simpai, Kampong Chin-Chin.

Euphorbiaceæ.

Breynia coronata, Hook. "Hujan Panas." Kwala Kahang.

Antidesma fallax, Muel Arg. Kwala Sembrong.

A. moritzii, Muell. Kwala Sembrong.

A. near *salicifolia*, "Wampana." Gunong Janeng.

Baccaurea parviflora, Muell. Simpai.

Aleurites moluccana, Forst. "Buah Keras Laut," Kampong Chin Chin.
Galearia affinis, Br. "Rambe Daun." Gunong Janeng, Kwala Sembrong.
G. pedicellata, Br. "Penurun Lutong." Gunong Janeng.
Macaranga, sp. "Mahang Merah." Sungei Hulu Sembrong.
Aporosa aurea, Hook. Gunong Janeng.
Croton Griffithii, Muell. Bukit Murdom.

Urticeæ.
Pouzolzia pentandra, Benn. Kwala Kahang.
Conocephalus scortehinii, King. Kwala Sila, Hulu Sembrong.
Gironniera nervosa. Kwala Sembrong.
G. costata, Miq ? Simpai.

Cupaliferæ.
Quercus sundaica, Bl. Kwala Sembrong.

Gnetaceæ.
Gnetum funiculare, Bl. Kwala Sembrong and Kwala Batu Pahat.

Orchideæ.
Oberonia, sp. Apparently new. Hulu Sembrong.
Liparis disticha, Lindl. Kwala Kahang.
Dendrobium (§ *aporum*) *Leonis*, Rchbf. Bukit Murdom.
,, *grande*, Hook. Kwala Sembrong.
carnosum, Lindl. Kwala Kahang.
D. (strongyle) subteres, Lindl. Kwala Kahang, Kwala Sembrong.
D. pumilum, Rchbf. Kwala Sembrong.
D. crumenatum, Lindl. Kwala Batu Pahat. A form with the flowers tinted red.
Cirrhopetalum, sp. nov. Batu Pahat (I have this from the islands south of Singapore.
C. Gamosepalum, Griff. Sungei Kahang
Bulbophyllum, sp. Kampong Simpai, Kampong Chin-Chin, and Sungei Malitil. I have this also from Borneo, where it was collected by Dr. Haviland.
B. vermiculare. Hook. Kwala Kahang.
B. concinnum, Hook. Sungei Kahang.
Claderia viridiflora, Hook. Simpai.
Eria nutans, Lindl. Kampong Simpai.
E. pulchella, Lindl. Kwala Kahang, Kwala Sembrong.

Cœlogyne macrobulbon, Hook. Gunong Janeng.
Plocoglottis javanica, Bl. Simpai.
P. porphyrophyllus, Ridl. Kwala Kahang.
Arundina densa, Lindl. Gunong Janeng.
Bromheadia palustris, Lindl. Kwala Batu Pahat.
Eulophia squalida, Lindl. Batu Pahat.
graminea, Lindl. "Kaling Lilin" Bukit Murdom.
Vanda Hookeræ, Lindl. Kwala Batu Pahat.
Renanthera maingayi, Hook. Batu Pahat.
R. micrantha, Lindl. Batu Pahat.
Phaloenopsis sumatrana, Teysm. Kwala Sembrong.
Sarcochilus calceolus, Lindl. Batu Pahat.
Appendicula callosa, Lindl. Kwala Kahang.
Acriopsis javanica, Bl. Bukit Murdom.
Thelasis capitata, Bl. Simpai.
Galeola altissima, Rchbf. Bukit Murdom.
Hydra, Rchbf. Gunong Janeng.
Lecanorchis Malaccensis, Ridl. Bukit Tana Abang.
Apostasia nuda, Lindl. Bukit Murdom.

Scitamineæ.
Alpinia Rafflesiana, Wall. Simpai.
A. conchigera, Griff. Kwala Sembrong.
Koempferia tillandsioides, Bak. Kwala Sembrong.
Gastrochilus bilobus, Ridl. "Napus Papa." Gunong Janeng.
Globba, sp. Kwala Sembrong
Zingiber Griffithii, Bak. Bukit Tanah Abang. Gunong Janeng.
Clinogyne grandis, Benth. Sungei Hulu Sembrong.
Canna indica, L. "Ganjong." Sungei Hulu Sembrong.

Burmanniaceæ.
Thismia, sp. Batu Pahat.
Gymnosiphon borneense, Becc. Batu Pahat.

Dioscoreaceæ.
Dioscorea pyrifolia, Kunth. Ulu Kahang.

Liliaceæ.
Dianella revoluta, Endl. Gunong Janeng.
Dracoena, sp. Ulu Kahang.
D. aurantiaca, Wall. Batu Pahat.

Pandanaceæ.
Pandanus Russow, Miq. River banks.

Aroideæ.

Aglaonema nitidum, Schott. Gunong Janeng.
Anadendron montanum, Schott. Bukit Tana Abang.
Alocasia longiloba, Miq. "Keladi Rimau." Bukit Murdom.
Scindapsus, sp. Chin-Chin.
Cryptocoryne, sp. Simpai.

Palmæ.

Pinanga disticha, Bl. Batu Pahat.
P. subruminata, Becc. Bakit Tana Abang.
P. sp. Kwala Sembrong.

Eriocauleæ.

Eriocaulon wallichii, Lindl. Gunong Janeng. A curious form with many leafy bulbils in the heads.

Cyperaceæ.

Mariscus umbellatus, Benth. "Mendarong Ekor Tupai," Kwala Sembrong.
Pandanophyllum multispicatum, Bckler. Kwala Sembrong.
Hypolytrum latifolium, Rich. Kwala Sembrong
Mapania hypolytroides, Benth. "Pandan Biru", (also known as Umbai). Kwala Sembrong. This plant is used in mat-making in Malacca.
Gahnia Javanica, Zoll. Bukit Murdom.
Scleria malaccensis, Bckler. Kwala Sembrong.
loevis, Willd. Kwala Sembrong.
lithosperma, Nees. Kwala Batu Pahat.
Carex indica, L. Kwala Sembrong.

Gramineæ.

Panicum auritum, Presl. "Gumpai." Kwala Sembrong.
P. myosuroides, R Be. "Rumput Bijan." Kwala Kahang, Kwala Sembrong.
P. colonum, L. Kaling, Bukit Murdom.
P. Ridleyi, Hack. Kwala Kahang.
P. radicans, Retz. "Upat." Kwala Kahang.
P. luzonense, Presl. Kwala Sembrong.
Isachne australis, Beauv. Bukit Murdom.
Pogonatherum polystachyum, Beauv. Kwala Kahang.
Leptaspis urceolata, Beauv. Kwala Sembrong.
Phragmites roxburghii, K. Bukit Murdom.

H. N. RIDLEY.

The Camphor Tree and Camphor Language of Johore.

BY H. LAKE AND H. J. KELSALL.

The Bornean Camphor, Kapur Barus, is an important product of the islands of Borneo and Sumatra and although for some time time it has been known that the tree producing it *(Dryobalanops aromatica*, Gaertn) is a native of the Indau district of Johore, the fact has not been recorded in any botanical work. During the recent expedition across Johore, the account of which is also published in this Journal, Messrs. Lake and Kelsall not only obtained specimens of the tree, but collected also as much as possible of the Camphor language used by the Jakuns while on the search for the camphor. The following notes on the history of the product may be of interest to, and may serve as an introduction to, the list of vocabulary.

Dryobalanops aromatica, Gaertn, *D. camphora Colebr* is a lofty tree belonging to the order Dipterocarpeæ, an order well known as producing most of the resins known as Damars. The stem is about 3½ feet in diameter at the base, and from 100 to 150 feet in height, straight and unbranched till near the top, where it forms a large crown of branches; at the base it often throws out large buttresses. The bark is rough and of a dark brown colour, and is used for making walls of huts, etc. The wood is dark brown, very resinous and strongly aromatic. It is much used in Borneo for building. Like most Dipterocarps it appears to be a tree of very slow growth.

The tree is a native of North Borneo, Labuan, North-West Sumatra, and on the Madek and Kahang rivers in Johore, but there is no record of it from any other part of the Malay Peninsula. It yields two distinct products. Borneo camphor (Kapur barus), and Camphor oil (S'mp'loh kapur in the camphor language.) Minyak Kapur, in Malay Barus, is the name of a locality in Sumatra where for many centuries the camphor has been obtained.

The earliest mention of camphor known occurs in the poems of Imru-l-kais, an Arabian prince who lived in Hadramant, by the Gulf of Aden, in the sixth century. It was then evidently very rare, and highly prized as a perfume. It seems quite clear that the Bornean camphor was known before the Chinese camphor, the product of the camphor Laurel *(Cinnamomum camphora).* The Mediæval Arabian writers state that the best camphor came from Fansur, also called Kansúr or Kaisúr, a place visited by Marco Polo. Yule believes this to be the same as Barus in Western Sumatra. Garcia in the Historia Aromatum (1593) gives a long and interesting account of it, of a portion of which the following is a translation. "Camphor is truly a noble medicine, of which there are two kinds, viz., camphor of Borneo and that which is brought from China. Borneo camphor has never yet penetrated to our regions, at least if it is here I have not happened to see it, nor is that strange, since a pound of it is worth as much as a hundred pounds of that which is brought from China. Of the Borneo camphor, which is as big as a millet seed or a little larger, the greater part is worthless. The Gentiles, Baneanes (Hindus), and Arabs who sell it say it consists of four kinds; for they classify it into head, breast, legs and feet.* That of the head is worth 80 pardans a pound. (A pardan is an Indian gold coin worth 10 Castilian Rials), that of the breast in worth 20, of the legs 12; of the feet, 4 or, at most, 5. Some, more particular, have four copper instruments perforated with holes of different sizes, (like those which pearldealers have) and pass the camphor through them. Those pieces which pass through the instrument with the larger holes have a certain value; those which are passed through the one with medium holes another; and those which pass through smaller holes another value. But the Baneanes are so clever at distinguishing them, that when mixed they can tell one camphor from another, nor can any one be found who can easily deceive them. Much of this camphor is produced in Borneo, Bairres, Sumatra, and Pacen. But the names of the places in which Serapion and Avicenna say it is produced for the most part are corrupt. For what Serapion calls Pansar, is Pacen in Sumatra; what Avicenna calls Alcuz may be Sunda, which is an island near Malacca."

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* See Marsden's Sumatra, p. 121.

(Clusius appends a note to this saying, " Copies of the last edition do not give Alcuz, but Alkansuri and Ariagie, then Alczeid and Alescek." Alkansuri is evidently the kansur alluded to above. And what Serapion says came from the region of Calca is corrupt, and he should have said from Malacca, since it is produced in Bairros, near Malacca.)

" Camphor is a gum (not the pith or heart of wood, as Avicenna and some others think) which falling into the pithchamber of the wood is extracted thence or exudes from the cracks. This I saw in a table of Camphor wood at a certain Apothecary's, and in a piece of wood as thick as the thigh presented to me by Governor John Crasto, and again in a tablet a span broad at a Merchant's. I would not, however, deny that it may sometimes be deposited in the hollow of a tree. It is told me as a fact that it is the custom that when any one who goes out to collect it has filled his gourd, if any other stronger person sees him with the gourd, he can kill him with impunity and take away the gourd, fortune assisting him in this. That which is brought from Borneo is usually mixed with small bits of stone or some kind of gum called Chamderros, much like raw sugar or sawdust. But this defect is easily detected ; I know no other method of adulteration. For if sometimes it is seen to be spotted with red or blackish dots, that is due to treatment with dirty or impure hands or they may be caused by moisture. But this defect is easily remedied by the Indians. If it is tied up in a cloth and dipped in warm water to which soap and lime-juice has been added and then carefully dried in the shade it becomes very white, the weight not being altered. I saw this done by a Hindu friend who intrusted me with the secret. * * * * What they say as to all kinds of animals flying together to its shade to escape the fiercer beasts is fabulous. Nor is it what some, following Serapion, write less so, namely, that it is an omen of larger yields when the sky glitters with frequent lightning or echoes with constant thunder. For as the island of Sumatra, which some think to be Taprobane, and the adjacent regions are near the equinoctial line, it follows that they are subject to constant thunderstorms and for the same cause have storms or slight showers every day ; so camphor ought to be abundant every year. From which it is clear that the thunder is neither the cause nor indication of a larger supply of camphor.

" Andreas of Belluma in his Dictionary writes that the Arabs distill camphor water from the camphor tree About this liquid I inquired much among doctors and merchants but could find no one who had seen it, whence I easily conjecture that he in describing it made a mistake.*

" Ruellin and Mathiolus following him and both after Serapion write that this camphor excelled all others in goodness which was called Riachina after a certain king Rihah (who first discovered the method of whitening it). But I cannot see how that since the Indian kings were very powerful, they should have any need to turn their attention to the showing off of their trade products."

Garcia then proceeds to discuss whether it is hot or cold. He imagined at first that it was hot, but finding that it was cooling when used for opthalmia and inflammation of the eyes, concludes that it is of a cold nature. Avicenna states that camphor makes people wakeful, but how can that be since Avicenna himself says it is of a cold nature, and cold things usually send one to sleep! But he concludes that by taking a little sleep may be produced. At the same time, however, if anyone smells it often enough and applies it to his nostrils it dries up the brain and keeps him awake. Such are the quaint ideas as to drugs of exactly three centuries ago.

Borneo camphor was evidently known long before that of the Chinese Camphor Laurel, and was always very highly prized and to this day it is too expensive for the European market. It is eagerly bought by the Chinese, Siamese, and Japanese for incense, embalming, and medicine.

According to the account given by the Jakuns the camphor occurs in cracks in the interior of the tree, which has to be split in pieces and the wood carefully scraped. The camphor thus obtained is washed free from fragments of wood and sap, and sold to the Chinese at Kwala Indau. The price varies according to quality from fifteen to forty dollars a katti.

Camphor oil is a different product, obtained by making a hole in the side of a tree and burning it in the same manner as is adopted for obtaining Minyak Kruing and other wood oils. It is also, in Borneo and Sumatra at least, found in hollows and splits in the wood.

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* Doubtless he was alluding to Camphor oil.

A very small percentage of camphor trees contain any camphor. The hunters first test the tree by making a deep cut in the bark if there is a faint odour of camphor the tree is cut down and thoroughly examined but not otherwise.

H. N. R.

The Camphor Language of Johore.

The chief interest attaching to the Kapur Barus in Johor lies in the superstitions connected with the collection of the camphor by the natives or orang Hulu (Jakuns of the Malays).

Amongst these superstitions the most important is the use of a special language, the subject of the present paper, which has been the means of preserving some remnants of the aboriginal dialects of this part of the Malay Peninsula. This language is called by the orang Hulu " Pantang Kapur," " Pantang " means forbidden or tabooed, and in this case refers to the fact that in searching for the camphor the use of the ordinary Malay language is " pantang," or forbidden. In addition to this there are restriction as to food, etc.,

This Camphor language is first referred to by Mr. Logan in his account of the aboriginal tribes of the Malay Peninsula (I. A. Journal, vol. 1, p. 293) and he gives a list of eighty words, thirty-three of which are Malay or derived from Malay.

In No 1 of this journal will be found some notes on the same subject by Miklucho-Macklay, and in No 3 Mr. Hervey, in an account of his trip to Gunong Blumut, refers to the same subject and gives a list of words collected by him which he compares with Mr. Logan's list. In No 8 of this journal Mr. Hervey, in his account of a trip up the Indau and its tributaries, again refers to the camphor language and discusses its connection with the aboriginal dialects of the Malay Peninsula.

The Jakuns believe that there is a "bisan," or spirit, which presides over the camphor trees and without propitiating this spirit it is impossible to obtain the camphor. This "bisan" makes at night a shrill noise, and when this sound is heard it is a sure sign that there are camphor trees near at hand. (This "bisan" is really one of the Cicadas which are so numerous in the Malayan jungles).

When hunting for camphor the natives always throw a portion of their food out into the jungle before eating as an offering to the "bisan"

No prayers are offered up, but all food must be eaten dry, *i. e.*, without sumbul, or stewed fish, or vegetables. Salt must not be pounded fine; if it is eaten fine the camphor when found will be in fine grains; but if eaten coarse the grains of camphor will be large. In rainy weather the cry of the 'bisan' is not heard. At certain seasons regular parties of Jakuns, and sometimes Malays, go into the jungle to search for camphor and they remain there as long as three or four months at a time. Not only must the men who go into the jungle to search for the camphor speak the "Pantang Kapur," but also the men and women left at home in the Kampongs.

The camphor occurs in the form of small grains deposited in the cracks in the interior of the trunk of the tree. Camphor is only found in the older trees, and not in all of these, and to obtain it the tree must be cut down and split up. There are certain signs which indicate when a tree contains camphor, one of which is the smell emitted from the wood when chipped. A man who is skilled in detecting the presence of camphor is called Penghulu Kapur. The camphor when taken away from the tree is washed and all chips of wood and dirt carefully removed and it is then sold to Chinese traders at Kwala Indau at prices varying according to the quality from $15 to $40 per katti.

The Camphor language consists in great part of words which are either Malay or of Malay origin, but contains, as above mentioned. a large number of words which are not Malay but which are presumably remnants of the original Jakun dialects which are apparently almost obsolete otherwise in the Indau and Sembrong districts of Johor.

H. L. and H. J. K.

Pantang Kapur Vocabulary.

	English.	*Pantang Kapur.*	*Remarks.*
1	To see	d'j'nok (S. Madek)	(Malay) tengo, to look
2	do	t'lek, p'nêlek (K. L'makau)	(Malay) ch'lek, to open the eyes
3	To take care	ch'lek	
4	Eye	p'ningok	(Malay) tengo
5	To hear	p'ningar	(Malay) dengar
6	Sickness	bintoh	
7	To hate	bintoh	
8	Angry	bintoh	
9	Tired	bintoh	
10	Lame	bintoh k'munyis	
11	To fight	b'bintoh (S. Madek)	
12	do.	p'das (K. L'makau)	(Malay) p'das
13	Free	p'das	do.
14	Soldier	käum p'das orang p'das	
15	Tapioca plant	kayu mabok (S. Madek) îsî mabok (K. L'makau)	
16	Scorpion	simpai (K. L'makau) p'nîpet (S. Madek)	(Malay) a hoop (Malay) p'nîtî, a pin
17	Clever	p'nîtek	
18	Stupid	bêh p'nîtek	
19	Lamp	p'hangat (S. Madek) suluh (K. L' makau)	 (Malay) suloh, a torch

English.	*Pantang Kapur.*	*Remarks.*
20 Fire	p'hângat	
21 Strong	t'gâp	(Malay) stout, muscular, solid
22 Hard	t'gâp	
23 To follow	jok (S. Madek)	
	t'roh (K. L'makau)	
24 To learn	b'troh	
25 To walk	jok p'ngunyîs	see 10
26 A Road	jok bagin	see 27
27 Large	bagin (S. Madek)	
	kori (K. L'makan)	
28 Wide	bagin	
29 Stout	bagin	
30 Much	kon	
31 Rich	kon	
32 A rapid	p'ng'rep (S. Madek)	
	talar (K. L'Makau)	
33 A tooth	p'ng'rep, or p'ng'rep p'mamah	
34 A rat	p'ng'rep	
35 A horn	p'ng'rep p'ningôl	see 205
36 Tusk (elephant)	p'ng'rep kon p'n'gâp	see 42
37 A well	p'ng'rep	
38 A fish	p'hompang (S. Madek)	
	p'ngumpan (K. L'makau)	
39 Leg	p'n'gâp	
40 Bone	p'n'gâp	
41 Shoulder	p'n'gâp	
42 Elephant	bagin p'n'gâp	see 27 and 39-41
	kori p'n'gâp	do. do.
43 Sandfly	p'nchadok	
44 Fly, horsefly	p'hôrong	
45 Mosquito	p'hôrong (S. Madek)	
	p'nchadok p'n'kok îsî (K. L'makau)	see 172
46 To act	p'muat	(Malay) buat
47 To grow	m'mantil	
48 To cut wood	manchas, mantil, or m'mantil	
49 To lie down	mantil	
50 Parang, knife	p'ranchas	

English.	*Pantang Kapur.*	*Remarks.*
51 Iron	p'ranchas	
52 A mark	p'ranchas	
53 Work	m'ranchas	
54 Manner, Conduct	p'ranchasan	
55 Afraid	lîbun	
56 To run away	lîbun	
57 To run	b'lîbun	
58 To stray	lîbun	
59 To lose	lîbun	
60 Back	p'nakân	
61 Afterwards	p'nakân	
62 Waist	p'nakân	
63 Rudder	p'nakân	
64 Boat pole	p'nakân	
65 Age	p'nîop	
66 Wind	p'nîop	
67 Afterwards	d'binkai	
68 Now	d'binkai	
69 Quite	s'ranchas	
70 Sky	tongkat ch'lean	
71 Sun, day	tongkat trang	
72 Year	tongkat bagin	
73 Moon, night	tongkat g'lap	
74 Last night	sa tongkat g'lap	
75 Star	anak tongkat	
76 Noon	tengah tongkat	
77 Afternoon	tongkat lasop	
78 Yesterday	tongkat ch'lek	
79 Thunder	jauh bunyi tongkat or jauh bunyi	
80 Lightning	lîling or p'liling tongkat	
81 Woman	bisan	
82 Marriage	b'bisan	
83 Cat	bisan iaong	
84 Bird	bisan	
85 Fowl (barndoor)	bisan junkar	
86 Mother	ibu bisan	
87 Widow	bisan pantus kotol	see 156 and 89
88 Father	ibu kotol or ibu	

	English.	*Pantang Kapur.*	*Remarks.*
89	Man	kotol	
90	Malay man	ajul (S· Madek) käum (R. L'makau)	
91	White man	p'ntoi or p'ntol	
92	Brother	käum	
93	Sister	käum bîsan	see 81
94	Child	anak bîsan	
95	Trousers	p'rsok ajol	see 90
96	Red cloth	pampoin m'lakat	
97	Pinang	p'ngalat	
98	Gourd (labu)	buah lulok	
99	A hole	mambong	
100	A grave	p'mambong orang pantus	see 156
101	To bury	p'mambong	
102	Belly	mambong	
103	Tree	kayu mambong or mambong kayu	
104	G'tah jelutong	kayu mambong	
105	Baby	putek mambong	
106	Young	putek mambong	
107	Bucket	mambong s'mp'loh	see 132
108	Belt	îkat mambong	
109	I	k'mambong	
110	My	k'mambong punya	
111	One	s'mambong	
112	Two	dua mambong	
113	Heart	mambong m'r'sik	see 167
114	Brave, savage	p'das mambong	
115	Satisfied	puas mambong	
116	Sad	gadoh mambong	
117	To like	maëk mambong	
118	A game	p'maëk mambong	
119	A lake (tasek)	mambong dêlem	
120	Rotten	mambong	
121	Leaky	b'mambong	
122	Good, nice	nyamon	
123	Convenient	nyamon	
124	Cure to	nyamon	
125	Best	terlampat nyamon	

	English.	Pantang Kapur.	Remarks.
126	Bad (quite)	(p'ranchas) bêh nyamon	
127	Dirty	bêh nyamon	
128	Ugly	bêh nyamon	
129	Jealous	mambong m'r' sik ; bêh nyamon	
130	Cup, bowl	s'lek	
131	Basket	charok	
132	Water, a river	s'mp'loh	
133	A spring	p'nîngok s'mp'loh	
134	To bathe	b' s'mp'loh	
135	The sea	s'mp'loh k'masing	
136	Honey	s'mp'loh bani dahan (K. L'makau)	
	do	p'manis (S, Madek)	
137	Oil (cocoanut)	s'mp'loh buah pulau (K. L'makau)	
138	To cry	b' s'mp'loh p'ningok	
139	Bathing place or landing place	p'ngkalam bîsan	
140	To be	m'ngringat	
141	Beans	buah akar.	
142	To endure, bear	p'nch'mât	
143	Hair	p'nurun or p'murun	
144	Beard	do. p'mamah	
145	Feather	do. bisan	
146	Leaf, foliage	do.	
147	Rope	do.	
148	Tail	do.	
149	To beat, spear, prick	k'pang	
150	To sleep	m'rapat	
151	To sit	do.	
152	Bed	t'mpat m'rapat	
153	Trust, believe	t'salor	
154	To fulfil	salorkar buat p'ngunyîs	
155	Alive	p'nîop	
156	Dead	pantus	(Malay) mampus
157	Empty	do.	
158	To finish	do.	
159	To kill	do.	

	English.	*Pantang Kapur.*	*Remarks.*
160	To put out a lamp	pantus	
161	A ghost	s'kok (S. Madek)	
		orang pantus (K. L'makau)	
162	Oath	b's'kok	
163	One hundred	s's'kok	
164	Cold	sîap	
165	Hot	p'nîreng	
166	Small	putek	
167	Black	m'r'sîk	
168	Charcoal	m'r'sîk	
169	White	p'ntol (S. Madek)	
		selepoh (Simpai)	
170	Come	kîân, b'jok kîân	
171	Go	kîûn, b'kalo-î (S. Madek)	
		b'tran (b'troh)	
172	To eat, drink	n'kok	
173	Flower	maiong	
174	Fruit	buah	
175	Seed	chen-ot (S. Madek)	(n, o strong nasal sound)
		p'ningok buah (K. L'makau)	
176	Iron, stone, tin,	chen-ot	
177	Heavy	b'chont or chen-ont	
178	Banana	buah suguh	
179	Cocoanut	buah pulau	
180	Rice	buah rumput	
181	Salt	p'masing	
182	Wax	soloh bani dahan	
183	Gold	p'muning or pêchen kuning	
184	Silver	p'muntol	
185	Boat (jalor)	lupek or lopek	
186	Mat (tikar)	p'ngumbang (S. Madek)	
		p'ng'mang (K. L'makau.)	
187	A paddle	chuêr, p'mäut	
188	To swim	b'rchuêr	
189	To go up stream	b'chuêr p'ningol	see 305
190	To go down stream	k'b'nagak, k'b'nanyok	
191	Eight	lepen	
192	Nine	s'mêl	

	English.	*Pantang Kapur.*	*Remarks.*
193	Ten	s'pol	
194	Below	hamben	
195	Blind	lîpanch	
196	Deaf	lîpanch p'ningar	
197	Blood	g'tah	
198	Body, flesh	isi	
199	Ear	p'ningar	(Malay) dengar
200	Face	hadap	
201	Finger, hand, arm,	p'ngolek	
202	To hold	p'ngolek	
203	Hand	p'nganah (Simpai)	
204	Foot	p'napah	
205	Head	p'ningol, (S. Madek p'moh bûn or p'mubûn (K L'makau)	
206	Mouth	p'mamah	
207	Nail of the hand (kuku)	chongkop	
208	Nose	p'nchium	
209	Spear	p'nahân	
210	Jungle	seng	
211	Mountain	seng awal	
212	Gunong Janing	seng tumang (tumbang)	
213	River Indau	îkan lumpat	
214	River Mas	p'nguning	
215	River Jasing	p'musing	
216	Rain	p'jur	
217	To-morrow	kon-lot (?)	
218	Tongue	p'leng or p'teng	
219	Male	kotol	
220	Crocodile	bagin	
221	Ant	p'nchodok	
222	Rusa (deer)	s'balioh or s'blioh	
223	Kijang (deer), (Cervulus muntjac)	bîsan s's'rong (S. Madek) chewer s'rong (K. L'makau) sessungrong (Simpai)	
224	Dog	m'nchor (K. L'makau) dupan (Simpai)	
225	Pig	jokût (S. Madek) s'munkor (K. L'makau)	

	English.	*Pantang Kapur.*	*Remarks.*
226	Rhinoceros	s'nkrat	
227	Snake	akar	
228	Buffalo	chawer wong (or won)	see 223
229	Goat	chawer bek	see 223
230	Cloth	pampoin	
231	Head cloth	îkat mubun	see 205
232	Coat	p'r'sok îsî, p'nyîrong (Simpai)	
233	A ring	p'lîsok	
234	To keep	p'rhun, taroh	
235	Dress	ajol de-un	
236	Come in here	ajol d-ini	
237	Lazy	ajol	
238	Tired	bîrajol	
239	Silent	do.	
240	Hush (diam)	do.	
241	To stop, leave off	do.	
242	To touch at	do.	
243	To enter	do.	
244	To ask	ajol	
245	Untrue, a lie	p'ngajol	
246	A gun	p'njauh bunyi	
247	A bullet	chen-ot p'njauh bunyi	
248	An axe	puting p'nuyar (S. Madek) puting p'ningar (K. L'makau)	
249	B'liong	puting	
250	To buy	m'nîleh b'sîlih	
252	To sell	b'sîlih	
253	Damar	soloh	
253	Hut (pondok)	ch'niak	
254	Sireh leaf	k'nayek (S. Madek.) p'm'das daun (K. L'makau)	
255	Pepper	p'm'das buah	
256	Tobacco	p'ngayal	
257	Sand	p'nabu or p'nabur	
258	Swamp, mud	letek (S. Madek) lepek (K, L'makau)	
259	Rotan	p'ng'rek (S. Madek) p'ngrek p'ngíkat (K. L'makau) urat (Simpai)	
260	Thorn	n'nîar	

	English.	*Pantang Kapur.*	*Remarks.*
261	To exchange, substitute	sêlek	
262	To shift	sêlekkan	
263	To hire	sêlek	
264	To lend	do.	
265	To borrow	do.	
266	Value	do.	
267	Reward	do.	
268	To reward	b'sêlek	
269	To float	sêlek	
270	Cheap	muda sêlek	
271	Dear	ningkat sêlek	
272	Wrong	sêlek	
273	A fast	p'nadah	
274	God	p'nadah	
275	A fence	sasak	
276	A village	p'mengeh	
277	Padang (clearing round a village)	p'mengeh bagin	
278	Fine, thin	kichon	
279	Sail	saiap	
280	To fly	b'saiap	
281	A garden	dusun	
282	To gather	put'her	
283	To get up (bangun)	ningkat	
284	To stand	ningkat	
285	To go up (naik)	do.	
286	Baggage (barang-barang)	pêchem pêchem	
287	Hammer	p'ngăpan	
288	Hang	iniot	
289	Harm (ch'laka)	pantangkon	
290	To hit a mark	singgah	
291	Hungry	bolûr	
292	To wound	l't'kok p'ranchas	
293	To forget	langap	
294	Ignorant	'relus	
295	Fire place	p'ngabur	
296	Medicine	upas	
297	Ipoh (milk of Antiaris)	upas	

	English.	*Pantang Kapur.*	*Remarks.*
299	Blowpipe	p'm'ralis	
300	Blowpipe dart	p'ranis	
301	Bridge	s'rendong	
302	To bring	hambin	
303	To take (bawa)	do.	
304	To receive	hambin k'kok	
305	To remain	lahor	
306	To shove	do.	
307	To throw	do.	
308	To spread out	do.	
309	To go down	m'lahor	
310	To fall	t'lahor	
311	To let go	do.	
312	To throw away	do.	
313	To spill	do.	
314	To live (tinggal)	do.	
315	Loss	do.	
316	To sink	t'lahor k's'mp'loh	
317	Broom	p'nlahor	
318	Branch, twig	h'rengis (or rengis)	
319	To burn	lagat or m'lagat	
320	To light a lamp	lagat	
321	Quick	m'lagat	
322	Sharp	m'lagat	
323	To call	k'lo-î	
324	Cap	sapu p'ningol	
325	Careless	langgap	
326	To take up	t'ngkat	
327	To climb	do.	
328	To carry (tatang)	buka	
	do. (janjong)	s'rkap atas p'ningol	
	do. (pikul)	m'-en or m'hen	
329	Break, split, tear	chel'her	
330	Young	putek	
331	Old	kawat	
332	Iron	do.	
333	Iron pot	do.	

	English.	*Pantang Kapur.*	*Remarks.*
334	Fathom	kawat panjang	
335	Cubit or span	kawat pendek	
336	To wink	kawat p'ningok	
337	To kneel	p'mobûn s'munkol	
338	To be acquainted with,	p'ng'nal	
339	A ladder	p'nganah	
340	Language	p'mêseng	
341	To laugh	m'lahin	
342	Less, wanting	tîada p'nchonkop	
348	Letter	panchurek	
344	Betelnut cutter	p'nyîpet	
345	Prawn	p'nyîpet	
346	Tiger	toman	
347	To look for	p'ringat or m'ringat	
348	Mad	mabok	
349	Worm, maggot	dupan, hîdupan	
350	Kajang, atap	p'rongkopor prungkop	
351	Jews harp	(g'nggong) g'm'renchong	
352	Nail (paku)	p'mentek	
353	Name	isik	
354	Neck	p'ng'somp	
355	To want	mot	
356	Don't	bêh mot	
357	Casting net (jala)	p'nîbar	
358	News	sadar	
359	Onion	p'mauh	
360	To open	raiat (or raiap) m'raiap	
361	Lime fruit	buah tomang	
362	Order (hukum)	kuning	
363	To pardon	k'sunkok	
364	Wages	p'ng'rek	
365	Gain	b'rupas	
366	Dig	ko-koit	
367	Diligent	lasek	
368	A strait	s'ngp'ngalat	Malay, s'lat
369	The Sultan of Johor	Orang sunkok p'ngalat	
370	Pahang man	P'ngapang	
371	Sultan of Pahang	Orang sunkok p'ngapang	
372	Kelantan man	sang p'nomok	

	English.	*Pantang Kapur.*	*Remarks.*
373	Tringanu man	s'nkalu	
374	Dry	riukai	
375	Shallow	(do.)	
376	Ripe	(do.)	
377	Thin, lean	(do.)	
378	Know	p'naho	M. tahu
379	To talk	p'nâho (p'nâhul), sadak	
380	Dumb	ta p'nâho	
381	Foolish, stupid	(do.)	
382	Early	t'ngkalom	
383	Earthen pot	pakan	
384	East (wind)	(p'niop) p'numpoh	
385	North do.	do. p'ningol	
386	West do.	paienkon, p'niop masing	
387	South do.	(p'niop) p'ng'pang	
388	End	pochok	
389	Same	kompol	
390	Fault	t'salor	
391	Matter	salor	
392	Gouge (used for making an incision in Gutta tree)	ch'long bleng	
393	Eternal	t'tap birajol	
394	Korap (a kind of itch)	ch'kos	
395	Kudis (psoriasis)	p'ngatal	
396	Difficult	gagor	
397	To make a noise (bising)	gagor	
398	To cheat	akar tiada nyamon	
399	To clean	kon-lont (?)	
400	Close	chonkop	
401	Command	che'loi-en	
402	Corner	t'rosok	
403	Coward	p'ngayal	
404	Custom	p'rintak	
405	Damage	chachat	
406	Dance	lê-ek	
407	Danger	lîpat	
408	To go home (pulang)	b'lipat	
409	To turn, return	m'lîpat	

	English.	*Pantang Kapur.*	*Remarks.*
410	Debt	kuning	
411	Far	awal	
412	A long time	awal	
413	Near	bêh awal	
414	New	bêh awal	
415	To hide	lîbun bêhawal	
416	Fish trap made of the thorny flagella of rattans (onak)	tuar	
417	Doctor (poyang)	trus p'ningok	
418	Door (really a railing to prevent children falling down the ladders of the houses)	hadap anak	
419	Ashamed	aiep	
420	To pick up	'mben (ŭmben)	
421	Pillow	p'ningol p'mubun	
422	Pineapples	s'jambol	
423	To put	kompol	
424	Poor	paieng	
425	Little	s'dokon or bêh kon	
426	To reach	salor	
427	To read	p'mamah	
428	Steal	îlek	
429	Around	b'p'musing	
430	To rub	kulut	
431	Rust	rojol	
432	Safe	p'nyîmat	
433	Salt	p'masing	
434	Sew	p'nyîmat	
435	Shore	k'ring	
436	Sing	m'pîor	
437	Skin	chunkop	
438	To slip	palin	
439	Slippery	b's'let	

	English.	*Pantang Kapur.*	*Remarks.*
440	Soft, weak	mo-ont	
441	Spark	bunga p'hangat	
442	Entangle	p'nyangkot	
443	To lengthen	p'manjang	
444	To swear	b'rkuning	
445	Sword	manchong	
446	To take hold of	p'manchong	
447	There	kîum	
448	Umbrella	p'ngumbang	
449	True	lurus	
450	Chest, breast	hadap, (S Madek) kawat (Simpai)	
451	Breasts (women)	susok buas	
452	Wet	towar	
453	Rain	rumeh (Simpai)	
454	Clouds	p'ngungkup	
455	Hear	p'nyêpok	
456	Gambier	ansê	

An old Orang Hulu at Simpai from whom I obtained some of the above words, told me that some of the words given by Mr. Logan (which I repeated to him) as Pantang Kapur were not such but merely ordinary Jakun words viz:—

Elephant	sêgântū
Drink	jo-oh
Thirst	leilo
Sit	birayah
Sell	piêh
Tired	kâboh

The following are some Jakun words collected at Kuala L'makau and Simpai. Some of them are the same as those given with the same meaning in the "Pantang" list but many of them are different.

	English.	*Jakun. K. L'makau.*	*Jakun, Simpai.*
1	Body	tuboh	
2	Eyebrow		lalis

	English.	*Jakuu, K. L'makau.*	*Jakun, Simpai.*
3	Forehead		k'ning
4	Heel		tumbit
5	Head		bubun
6	Mouth		bibir
7	Jungle		d'bri
8	Mountain		seng
9	Sea		s'mp'loh p'masing baruh
10	Crocodile	bagin	
11	Ant	m'set	
12	Dog	m'nchor	koyok. (see Marsden p. 93, kooyoo=dog)
13	Elephant		pêchem b'sar
14	Mosquito	rengit (Malay=a kind of sand fly)	
15	Pig		jôkôt
16	Rhinoceros	s'nkrât	
17	Tree	pohun kayu	M., ڤوهن pohon=trunk of a tree
18	Dead child	mantai	mantai
19	,, woman	baluh	
20	To feel hot	panas rasa tuboh	
21	Snake	kichon	
22	Come	kian	kiah
23	Drink		jo-oh
24	Seed	matu	
25	Cocoanut	nior	
26	Honey	ayer lebah	
27	A grave	pĕndam (*a* almost mute)	pĕndam
28	A friend	t'man	
29	Knee	to-ut	to-ot
30	Frog	bihong	
31	Small frog	b'bap	b'bap
32	Toad	b'skong	
33	To break the neck of a fish	k'leng	
34	Bark on tree	k'lupak	
35	Stripped bark	koyak	

	English.	*Jakun, K. L'makau.*	*Jakun, Simpai.*
36	Cocoanut shell	dasar	
37	Firewood	ungun api	chel-'her
38	Sumpitan	temiang	temiang
39	River bank	t'rbis	
40	Yes	iah	
41	No	bêh	bêh or bieh
42	Angry	t'keng	teken
43	Spider	t'wowoh	
44	Do not know	beh-na-hoh	
45	Go	joh	
46	This	jak	
47	That	'nun	'ndoh
48	Korap	losong	
49	Leprosy	p'ngundûm	
50	Kingfisher	b'kakak	
51	Black lotong (monkey)	k'kak	
52	Woodpecker	t'relom	
53	Millipede	gr-gok	
54	Racquet tailed Drongo	t'ntong	
55	A species of orchid *(arundina densa)*	p'hanyar	
56	Rainbow	bohutah	
57	A fire stick	larâk	
58	Fish trap made with onak		basôk s'ntapok
59	Not got	pohûs	pohûs
60	Weak		bêh rôt beh alah
61	Strangle		birajot
62	To kill with a kris		salang

A List of Jakun Names of persons.

Collected at S. Madek.

By H. J. KELSALL.

Men’s Names.

Mada
Maidong
P’manga
Pasoboh
K’pal’
Daham
Tuasa
Sedek
Limûn
Hampun

Women’s Names.

M’bidas
Lo-ot
G’dont
Li-ah
Pi-ah
Siti
Pochuk
S’pat
Angat
Lipat
Punkat
N’ngo
Didi
Silong
Dông
Che-koek
Nòt
Lek

JOURNAL OF A VOYAGE

FROM

India to Siam and Malacca in 1779.

By Dr. J. G. KOENIG.

Translated from his Manuscripts in the British Museum.

Introduction.

Jean Gerard Koenig, a pupil of Linnæus was born, in Livland, in 1728, and made his first expedition to Iceland in 1765, where he discovered the plant Koenigia, which was named after him. In 1768 he travelled to India where he acted as doctor to the Danish Missionaries at Tranquebar and afterwards was appointed Naturalist to the Nabob of Arcot. He was an enthusiastic botanist and imparted so much of his zeal to the European community there, that a botanical society known as the Society of United Brothers was formed. After visiting various parts of India and Ceylon he started on an expedition to Siam and Malacca at the end of 1778, returning to India in 1779. In 1784 he went to Calcutta, and died (June 26, 1785) at Jagrenatporoum.

His collections and manuscripts were bequeathed to Sir Joseph Banks and in due course became a part of the British Museum collections.

The Manuscript account of his travels and observations is included in nineteen quarto volumes, and written in a mixture of antiquated German and Danish in a very bad handwriting, so that its translation is a work of some difficulty. No portion has hitherto been published, but through the kindness of Mr. Carruthers, the Head of the Botanical Departmeut of the British Museum, we have been enabled to obtain a translation of such portions as relate especially to our region. I have added a few foot notes otherwise the translation made by Miss Overbeck has been hardly altered at all. The account commences with the starting of the ship *Bristol* from Madras on August 8th, 1778, on its way to Siam.

Journal.

August 8th, 1778.—After I had overcome many difficulties, good luck favoured me in the end, so that I could prepare myself for a journey to Siam, as well as time would permit.

I started on August the 8th, it was six o'clock in the evening when I went on board the ship *Bristol*, which was commanded by Captain Leith.

The captain himself arrived an hour later, and ordered the the anchors to be hoisted directly, and this was done in clear moonlight, while the wind was breezing up.

9th.—We saw the mountains, called by the sailors the "Paliacatish Mountains" on our left side, they seemed to me to be much smaller and less in number, than when I saw them two years ago, and they are known in the country by the name of "Nazari Mountains." Red Sandalwood* grows on these mountains, and that species of tree is frequently seen, upon which grow the *Myrobalanus citrina*† both of which I have described two years ago, and sent the description to Europe. After we had passed these mountains, the country grew quite flat, our favourable wind left us towards midday, and a perfect calm caused us to advance but little to-day. Towards evening our favourable wind returned, but feebly as yet, and early on the 10th we saw the mountains of Angola, which seemed to me to be much smaller than the Paliacatish Mountains. The calm was the same as yesterday, however we succeded in getting into the sea-water, which was rendered turbid by the river Kisna, which circumstance is very peculiar, as it lies more than twelve German miles from the mouth of the above mentioned stream, and more than than two miles from the shore. The calm forced my captain towards evening, to cast anchor, on account of the nearness of the land, so that the stream should not drift us in a wrong direction.

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* *Pterocarpus santalinus Linn fil*

†

11th.—Early to-day, at four o'clock, our captain hoisted anchor again, the wind was favourable but very strong, the atmosphere thick; these circumstances in conjunction caused my captain to feel grave doubts, because there are some sand-banks at this place, and on account of the misty atmosphere the low banks were difficult to recognise. In spite of all this he ordered the sails to be set, and we continued our journey in dull weather and equally dull water. The most interesting thing was to watch how the water of this Kisna stream and the sea-water met. The waves broke one against the other, and especially the fresh water threw the water of the river quivering up, in the shape of fingers, while the salt water, seemed to rise some what higher where it met the fresh water, which was partly caused by the strong wind. After nine o' clock the weather cleared up a little, and the first thing we perceived of the town Massulipatnam was the flag-staff, and a short time after we saw the town itself and the country through a telescope. This was agreeable to us all, because in the case of contrary chances our journey might have been prolonged for days. At two o'clock in the afternoon the anchors were cast in the harbour, two German miles from the town the water having a depth of three fathoms. The distance we were still from land, compelled me to stay on board for the night, and in the evening, when the weather was calm, and only the soft movements of the ship stirred the water I saw some phosphorescent specks, about as big as a small pea surrounded by a luminous ring. These were probably small animals. I tried to catch some of them, at this time however I was unsuccessful.

12th. Early in the morning I went ashore in one of the boats belonging to our ship. The wind was more favourable to me, than it had been to the captain yesterday, and in one and half hour I landed, which same journey had taken the captain five hours yesterday, The sea-water was not half as red as yesterday but just as muddy, and I could discover nothing on the bottom. There were neither animals nor plants to be seen, and as soon as we came into the mouth of one of the arms of the big river Kisna, its bed was covered with thick brownish mud, which mud increases the nearer one comes to the fortress which is situated on the banks, and almost entirely surrounded by the river.

The fortress Massulipatam, I have been informed lies on a bank of a minor branch of the big stream Kisna, reckoned by the native heathens to be the fourth in the order of holy streams, which are altogether seven in number, the Ganges being the first, ... the second, the Cadahverhi* the third, then the above mentioned Kisna stream, after this Kangiret, the Collorham† and as the last the Caveri, but in reality the latter is only a branch of the Collorham, which divides a few English miles from the fortress Tirutphinapalli.‡

Neither time nor circumstance permit me to enter into any details concerning the superstition of the Indian nation as regards these streams, except this only that it is considered a great happiness to have bathed in one of these streams, because it is said to secure future happiness, and if their burnt bones are thrown into these streams, a great benefit for the soul is derived from it. Therefore many of their chiefs, who have enough money are brought hither in urns from a great distance and with certain ceremonies, either by the Brahmin or their own relations.

I could not look about very much to-day, because in crossing from the ship to the shore, all my clothes got wet as the waves are very strong and towering at the mouth of the river; only in the afternoon I went over the ramparts of the fortress with one of my friends, Mr. D. Campbell, whom I met here quite unexpectedly. This fortress was newly constructed seven years ago by one of the best engineers, Major Steevensen. It used to be a French fortress, but was taken from them late one evening by the English. The French commander at that time was Mr. Conflens, brother of the well known admiral. There exist still many ridiculous anecdotes hereabouts, which do little credit to the French. Now the fortifications consist in a deep trench filled with water, and a low rampart, surrounded by a double wall, with many bastions well provided with cannons. The fortress is almost oval, and measures three English miles in circumference. It is situated directly on the arm of the Kisna, which passes it on its south western side. The country round about this fortress is low and flat, and completely covered by the sea when the flood is high. The eastern and western expanse is unutterably vast, and the ground all round the fortress is covered with mud. One way only, broad and straight, leads to the town, which used to have one of the forts of the fortress just in front, but now the bridge leading to it is demolished, the fort is closed and will be walled up, and at present the fortress has only two approaches, one of them leading to the stream and the other on a slope towards the land.

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* Godavery

† Kalerun

‡ Trichinopoly ?

There are few houses within the fortress and they lie scattered about. All are built of a kind of wood which I did not know before. They are commonly two stories high, and have at the second story a gallery at least on two sides. They seemed to be built in a very cool and convenient fashion though very irregularly. All have been erected by the native Mohammedans, who are here called "Moors." The different stories are seldom higher than 1½; they have flat roofs covered with hollow bricks.

The present head officer, Mr. Ledler, is very energetic; he has made broad level lanes, flanked with trees, some of which are even now already in excellent condition. The Dutch and French used also to have factories here before; the former left this place few years ago, and the French resident was forbidden to show his flag anywhere here in India, as soon as the war broke out, and he has been told to consider himself as prisoner of war, and therefore to keep quiet. Half a German mile from the town towards the North, one finds first some gardens and villas of the English living out here, and further on the big village, where really all the manufacturers live. The factory productions consist of a striped or flowered kind of cotton. The red Indian pocket handkerchiefs are of a pink colour, but are just as durable; and many things not actually manufactured here, are brought hither from distant parts of the country and offered for sale. There is also another kind of cotton material manufactured here, it is dyed pompadour, wears well, and is at this moment a very fashionable dress material at Madras.

Amongst the articles chiefly manufactured in this place is a kind of lacquer work, more common here than anywhere else in India, one sees therefore* cheridans, beds, old chairs, sunshades, the tops of palanquins, painted in this manner, art having the least part in these productions, but the nature and kind of varnish being most important. This varnish is said to be brought hither from Aidrabath and the Sellinique name used here, as well as the one used in Malabar, show that it must have been taken or prepared from a tree, for in both languages it is called Rogganonne, which may be translated into "prepared oil." This oil looks somewhat yellow, but is clearer than linseed-oil, at the same time it is thicker than the latter. It has little smell, neither aromatic nor smoky, its taste is somewhat nauseous and acid, it mixes easily with turpentine, and it forms in this mixture an excellent varnish which can be used even with white colour. It resists the effects of air and water and even the hammer, and the colours covered with this varnish are very durable and never alter with time. The native painters cover the silver in their pictures with it, and so produce the effect of gilding, but in this case the lac is dissolved with it. For ordinary painting they dissolve in it a kind of copal, which is commonly known in India under the name of Damar. All I could learn from the painter who is in the service of the local arsenal was, that it is made from a shrub, growing to half the height of an ordinary man, bearing a kind of long husks, out of the round seed of which this oil is pressed, and furthermore that its name is Stavensettoader or according to the German pronunciation, Agassetti or Agosissetti. According to what he said, these shrubs grow a little below Massulipatam, on the banks of the Kisna stream, however one can give but little credit to what the natives say, therefore I left further investigations to my friend Dr. Campbell.

13-14.—I explored the country in order to get more acquainted with its nature. The flora was extensive because it had rained several times a short while ago. I made a small collection of all the plants I found in bloom, which were more than three hundred, but amongst them were few interesting to me. The calderer plant § which is also called (hiatus in Mss.) formed here the ordinary hedge for the gardens. It is particularly fit for this purpose as it grows to 2 or 3 men's height and very close together. Its sword shaped leaves, which are provided with sharp thorns at their edges and their back, do not allow anyone to penetrate; but the drawback in these hedges is, that they take up a great amount of room and that their stems and their shoots being partly descending roots, form larger or smaller cavities wherein all bad vermin finds shelter; viz: the Ichneumon * *Canis aurens*, † and very often *Coluber naja.* ‡ They were just in bloom, but there were only male blossoms to be found, whose scent filled the whole air with its sweetness; I have given a description of them repeatedly and omit doing so here again, because Mr. Arch. v. Linne thinks there is a good description of it by Messrs Solander and Banks. The sandy and little overgrown places were almost entirely covered by the *Indigotea gratissima* which as one walks on fills the air with delicious perfume. I have already described it; it resembles very much the blossom of *Indigofera enneaphylla*, rarely (having) more than two blossoms; its stalks lie also on the ground, but are red and slightly hairy; its leaves are three to five in number, they are mostly oval and unequal in size.

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* ? Shandrydan.

§ Probably an *Aloe Agave.*

The open field was entirely covered with leaves, resembling those of the lily. Amongst them were some I did not know, but most of them were those of the Indian lily, a new plant, which is difficult to find, because it blooms in April and May without producing any leaves, and only when all has ripened and dried away, do its long narcissus-shaped leaves shoot out. I discovered what it was with certainty by planting the bulb in a garden, where I had the opportunity of watching what I have described the blossoms are not remarkable, this circumstance may be the reason why one has not introduced the plants into gardens. The second kind of the above mentioned leaves was those of *Ornithogalum Zeylonicum.* § It blows at about the same times but has its leaves when blooming. The third kind is a peculiar specimen of Melanthium. I have in my description called it *radicans*, because the tips of the leaves, as soon as they can touch the ground, produce new bulbs; in the Hortus Malabaricus of Rheede is a good drawing of the leaves. He has not had the blossoms drawn because they are but rarely seen. All the bulbs of these plants are called without any distinction Nari Wanjaram by the natives of Malabar, even the *Pancratium Zeylonicum* and *Mexicanum*, and only in some cases they use Cathe-Wail, Mallec, etc., according to where the flower is found, they call them, wood, field, mountain, etc., Teckchabs, (bulbs being the translation of this word). Their roots have been used intermixed by the French surgeons with Squills, and amongst them *Crinum asiaticum* and the *Amaryllis Zeylonica.* * The French are neither experienced in botany, nor conscientious in their cures, a proof for this being that they call the tendrils of the *Abrus precatorius*, Liquiritia.†

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* Mongoose

† Jackal

‡ Cobra

§ Probably a *Chlorophytum.*

Amongst these lily leaves I found some beautiful specimens of *Ophioglossum vulgare.* In a little pool I saw an *Ardea Gazetta*, holding a meal with several ravens. My curiosity made me investigate why these two guests, so very different in nature, should be together here, and I found that in this pool there were many small fish, young frogs still retaining their tails, and millions of shelled monoculi,‡ which were now exposed without water. On my return I saw near a pond some birds picking up worms in the damp grass, and by the chattering noise they easily betrayed themselves to belong to the family of the Gracula rook. Their head, back, wings and tail were black, above their eyes there was a white line, reaching as far as the neck, the breast was quite white, the beak yellow, at the base red, their feet were pale red, and when they flew I saw some white feathers in their wings. The size was that of an ordinary European black-bird, I am in doubt whether they were the *Gracala Saularis;* the short time I spent here did not give me an opportunity to catch one. I saw the *Phoenicopterus*,§ being kept by the Europeans in their gardens for show.

15.—I went across an arm of the stream to a village, which was very prettily situated, and where many big boats and some ships of several hundred tons were being repaired. The boat in which we crossed the river was a palm tree dug out with the root and then made hollow inside; this kind of boats is the only Cottmenous (Catamaran ?) sort of raftboat used here. The root end of the tree is several times thicker than the other end and is almost quite round by nature, except where the numerous thread like roots, which have the thickness of about a little finger, have been cut away, which places are marked by little spots. The other end of the tree is bluntly hewn off, and closed with another kind of wood; on the top it is cut flat on both sides, and a plank as seat for the steersman and those at the oars is nailed upon it. There is an opening scarcely half a foot wide along the whole length of the boat, but the inside is entirely scooped out, and more than twice as wide, specially at the thicker end. They are two fathoms long. They easily upset because they are round. The wood is taken from the black palms.* They are here called Saugeri. All the boats lying here were built out of black palm wood. Those which were built round had some planks from the root and stem of the *Mimosa nilotica*, which grows here very tall and strong. Those however which were blunt at the two ends, had been built entirely from palm wood, most of them being also quite round on the top with a little intersected railing, and all those that wen up the river were built in this way.

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* Crinum latifolium.

† Liquorice.

‡ Cypris.

§ Flamingo.

I did not find anything particularly interesting in natural history but many pieces of shells which had been thrown up by the sea during the last rainy season, among these were *Tellina*, *Solines*, *Ostrea ephippium*, and *Achatina*, and broken pieces of the green *Mytilus* which must have been very big. There was a *Paspalum* growing here in the sandy soil, the stolons were very long, creeping, leafy with a thick, red juicy stalk, the stalk stood straight up and was not surrounded with the flower sheaths of the leaves. The inflorescence was divided into two parts, spreading apart, and each had a short stalk, which was bordered with fine hair; it is very much like the *Paspalum distichum*.

A kind of *Portulaca*, with a creeping, red shiny stalk, and long fleshy leaves with red blossoms,† grew here frequently in the sand, and the Stipa spinifex covered the little sandhills here with some Salsolas.

Towards twelve o'clock I returned and had a good boat. The water had risen meanwhile.

16.—I visited the manufactories of the cottons made here, they are not so beautiful as those from Madras, the colours are not as vivid, but there is very little better material manufactured here. The Americans living here are the sellers, and spoil the trade very much for others. They take the place of the Jews in Europe.

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* No doubt *Borassus flabelliformis, L.*

† *Sesuvium portulacastrum, L.*

Many painted articles and much fine linen is brought hither for English society and trade in general.

Amongst the articles principally manufactured here, are the Persian carpets, which are used by the Indian grandees to sit upon; these carpets are mostly manufactured in a village called Elluhr, where the English have a fortress, and which is situated at two days' journey from Massulipatam. The Europeans have some of these carpets woven here, as large as their largest rooms. They look like a sort of velvet, as regards the way of weaving. The threads that form the chain are cotton, but the fluffy part consists of a woven wool, which is taken from some sheep, intermediate between the Indian goats and ordinary sheep. Their hair is rather woolly but very short and stiff to the touch, but when this wool is washed, it has a peculiar gloss, and can be dyed in beautiful rich colours. The horns of the rams stand out at the sides. They are flat and shorter than the ears, the ears are mostly as long as the whole head, which is somewhat longer than that of the European sheep, they have clumsier feet than the European ones, and the rams have no beards. These carpets are very cheap here, though they pass into the hands of the Armenians.

There is another celebrated place near here, called Condapilli, where there are also many manufactories, but notably the best lacquer ware articles in India are said to be made here. The coins in use here are the three Pagodas, these are coined here, and are 10 p. c. better than the star pagodas, besides they coin here ruppies, and have no smaller coin here in either silver or gold, but only copper Duth. These are very big and unshapely coins, and contain almost their whole value in copper, for one Ruppie one receives (value left out in M.S.) Duth, each Duth weighs (weight left out in M.S.) The smallest coins are the kauris or—(name left out in M.S.)

The inhabitants of the Sarkaro are of a much merrier nature, more obliging, more polite and more sociable. There is less vice and deceit to be found among them, nor is the hatred against the Europeans, which is so popular in Madras, as conspicuous here, A European may take food in their houses and is quite welcome; but every door is closed to the Carnatis, and other signs of dislike are frequently given to them. They explain this circumstance here in this way, that some Europeans, in order to get more friendly with the natives, have inspired them with a hatred, against their own nation, which is said to have given rise to their hostilities.

Their houses are in many places, specially inland, worse than those in the Carnatic, and one rarely meets a Pagoda built of stone, and even these, compared with the Pagoda of Taufchaukin, are wretched hovels. Many have the walls built of mud and a roof of palm leaves.

The sea was filled with a kind of molluse, which seemed to me to have a conical shape and to be of opal white colour; they hung downwards with their tops almost perpendicular, thicker at the upper butt end, they seemed to be divided and overgrown with short fibres, which were either flesh coloured or brownish, ten of them were white. They were about as long as a finger, and near the mouth they seemed to be thicker than a swan's quill; I could not catch any because the order to hoist the anchor was given just at this time. I hope to obtain some at the place we are going to.

18.—We went on board again, the anchor was hoisted, we had a fairly good wind, and the captain continued his course towards another place, called Nahapur, which is situated about fifty English miles further north. Towards three o'clock we had a very strong south-western wind together with some rain, and we were brought to our anchorage towards 6 o'clock in the evening. We cast our anchors about five English miles from the shore, the water being three fathoms deep, and the ground being very muddy. We were quite close to a sand-bank, which runs for some miles into the sea. There is also the mouth of an arm of the river by far bigger than the Kisna, called Ghodawetu, which also sends red muddy water into the sea. It was too late to-day for going ashore. but the captain sent a letter on shore, and early in the morning the captain and I went on land, we were about two hours on the sea, ere we reached shore, and there we found palanquins already awaiting us, which were to take us to Madepolam, a place situated fifteen miles inland. The first thing I found on shore was the *Paspalum* I had seen near Masulipatam, and secondly the *Milium*, both of which were more perfect here. The arm of the Ghodaveri stream forms here many big and small bays, which could shelter a whole flotilla, if only at its mouth the water were deep enough. We passed many muddy minor arms of the afore mentioned stream, which the palanquin bearers waded through; the water was however all intermixed with salt water which was proved by the circumstance of the Kali growing in abundance, some species of *salsola* and *Chenopodia*, and also some *Bontia*, growing here as a tiny shrub. There were innumerable brown shoots standing in the muddy soil, they were pointed, longer than a foot and resembling the stubbles in a field. Further inland I frequently saw *Excœcaria* of both sexes; but very rarely *Rhizophora.*

My palanquin bearers took me across a wide arm of this stream, which was filled with a plant whose leaves were hairlike, but my people would not stop, because the water issaid to be full of crocodiles, By chance I got some specimens of the *Ruppia maritima* by means of my stick, whilst sitting in mypalanquin. This is a plant I had not found in India before.

Then we came to some meadows, upon which grew some specimens of Eyshosia (*Tephrosia?*) with big yellow flowers. I have seen this plant several times growing somewhat taller than a finger, but those I saw here were almost one foot high, they looked very pretty among the smaller *Evolvuli* and the *Schoenus* .... Other plants were not yet in bloom here, because the rain had begun to fall.

We passed a narrow but very deep arm of the river, said to be full of crocodiles, in two palm boats, or Saugeri, as they are called here, tied together.

The shore was rather higher here and a little further inland there stood millions of palms and coco-palms, very few other kinds, and these were, Mimusops Kauki, some Cratoeva Tapia, some already in bloom, a few plants of *Pedalium Murex*. In places where the soil was composed of red sand, there grew a kind of grass of a beautiful green colour with distichous leaves lanceolateacute shining waved on the surface. I could not see whether this was *Panicum capillare*,—because not one among so many thousands was yet in bloom,—though they looked very much like this plant.

At last towards 12 o'clock we arrived in Madepolam, and we took quarters at the Factors' house.

Madepolam is a big place, having manufactories, especially fine cottons are made here. The streets are irregular and narrow, but the houses better than the usual ones in these countries, they are bigger and many of them are built of wood, like those in Masulipatam. The mud-houses were covered with a kind of pipe clay and look ashy grey and they have some white stripes running all round, consisting of small triangular dots arranged in rows.

The people are even merrier and more polite than I had found them in Masulipatam, their rooms are clean and they sleep small beds, a thing rarely seen near Madras.

The Dutch used to have a manufactory here as well, but they have left it, and the building is a ruin.

The manufactory which is now in the possession of the English as well as the whole country, used to belong to the French. The factory consists of three substantial houses, built in European style and besides there are some warehouses to store the goods in manufactured here.

These houses lie at the eastern extremity of the tower, close to the rather high bank of a big arm of the Godaveri, in a very pleasant part of the country.

In the afternoon I looked round for some plants, and found a new species of the family of *Boerhaavia.* It had indeed five stamens but everything else showed that it belonged to this family; therefore I was not willing to separate it from this class. It has opposite heart shaped leaves, which are covered with white soft shiny hair; *carissa arborea* had beautiful blue fruit as large as a plum, and they were in such abundance that it looked more blue than green. There is a very good red jelly made from the juice of this fruit.

I saw here the *Cæsalpinia Nuga* forthe first time, it is an excellent shrub for hedging purposes where the country is flat. There was a species of *Excoecaria* with long pointed leaves very shiny above but they were not as juicy as those of the ordinary kind. There was a Monoica bearing the male spikes on the same tree, the fruit were generally as big as a lemon, the tree was scarcely two metres high. I obtained some beautiful ripe seed of it.

20.—The Factors took us to a garden belonging the Bem Ross or Raja; it lay some miles inland. The whole way thither passed through very pleasant parts of the country. We saw many kinds of birds near the water and at the same time many of the above mentioned *Gracula.*

From the garden we saw at some little distance the residence of the king, which is a pretty strong fortress in a favourable position, but the king has no garrison in it, and does not need to either, because he is sufficiently protected by the English; he only has the number of people necessary for his comfort or state.

The garden was very large and full of useful trees, many *Plumieria* had been planted along the principal paths, they looked very well with their long, striped, and folded leaves. In the garden itself I found a small Pandell, upon which grew a kind of creeper, with very beautiful white blossoms that had a agreeable perfume, it was one of the Contortae.* There were some flowers at the raised ends of the branches, and generally three on one stalk. The calyx had five lancet-shaped expanded concave, smooth membranous leaves, and they grew at the same distance from the floral crown by means of a short stalk. The floral crown was funnel-shaped, the tube had five furrows, was smooth, whitish green and shorter than the calyx; the limb was divided into five parts; the flaps spread out and grew vertically on the tube, each of these flaps was oblique, lancet shaped, wider than those of the big jessamine. The stamens grew in the furrows of the tube and were quite short; the authers stood erect, they were linear and divided in two parts at the tips. The style simple, stigma obtuse, pistil oblong angled. There were no capsules bearing fruit to be found. This is always the case if plants have been reared from cuttings or slips, I therefore could not find out what class it belonged to. The broken twigs had a milky juice.

I also saw a new specimen of grass among the brambles, which looks very much like *Phleum.* On our way back I was delighted to see some exquisitely fine blossoms of the *Nymphea*† *Nelumbas.* Amongst others I saw one of a blue colour. *Cyperus elatus* was here mostly growing to the height of a man.

After our return the gentlemen took me to see some of the principal people who print or paint cottons. There are two different kind of people employed in this printing and painting of cotttons. The printing forms are carved of Teak wood, the biggest of them being little more than one foot long and half a foot wide, but I often saw smaller ones according to the pattern. The man printed in my presence some red and black cottons. The stuff was first of all strongly saturated with alum and kaveksy *(Myrobalanus citrinus)*, so that it had a greenish yellow colour. This stuff the workman spread out over a wooden bench, which was 1½ feet wide, four feet long, and one foot high. There was some of the coarse wollen material used here, spread over this bench in several layers. The colours had already been prepared in little flat boxes ; these boxes were 1½ feet long and one foot wide and had a border about as high as ones' hand. There were some little rods lying inside, which were tied on two sides, the rods coming from the sides were a little longer than a foot and across them were tied some other rods somewhat shorter than a foot; they stood about half an inch apart, each rod was ¼ of an inch wide and hardly 2 lines thick. They consisted of bamboo or thin split rotan. These rods were not fastened to the box, but were tied together and could be lifted out of it independently. Over these rods were some layers of woollen cloth folded several times and being a little longer than the rods. On and between this cloth the colour was really placed, and the rods were only meant for the purpose of dividing the colour more equally ; there was so much colour in these boxes that it was almost equal to the cloth.

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* Apocynaceoe.

† *Water Lilies.*

The red colour consisted of sappan-wood boiled with alum, and mixed with the gum of the *Mimosa nilotica*, so that it was altogether as thick as honey, without any further addition. The black colour consisted of old iron on which was poured Toddy from the palms, added to this a little *Myrobolanus citrinus*, in order to render it very black, then it was mixed with the above mentioned ingredients to bring it to its proper thickness. When the printer begins printing the stuff, he takes the wood pattern, and putting the same on the cloth in the box, presses it down a little, and then places it on the prepared linen, knocking it first with his first and then with a club of about one foot in length, which at the thicker end is of the size of a fist. One knock with this club is sufficient to print the pattern on the linen, and in this way he continues, filling the patterns and colours very accurately, and all this is done very quickly indeed.

There are also some kinds of cotton manufactured here with a gloss over them, and figures were mixed amongst the flowers.

Afterwards I saw the great ponds, used to bleach the fine kinds of linen, and ended up by visiting the graves of the first Europeans, over which monuments as big and in the shape of houses have been erected ornamented with rich sculpture. Amongst them was also that of an English lady buried here almost hundred years ago; she had been called Hattung, as a big black gravestone, hewn out of rock and polished, announced in wide, sprawling Latin writing.

In the afternoon I visited the men who manufacture the lacquer-wares, hoping to get some more information regarding them, because there is here a more direct communication with Aidrabath, but I was not successful.

I saw that they fill the joints of the little boxes intended for painting, with an ordinary paste of *Causch* (cutch?) and ground Tamarind bark, after which they made a foundation for the lacquer ware with a finely ground fat pipe clay and Causch. The rest of the work is very simple. The lacquer-wares here are superior to those of Massulipatam, specially the black ones.

21.—We went back to our ship quite early. On our way thither it rained; I looked very eagerly for the molluscs, but the water was too turbid. In the evening our captain started for for open sea.

22.—The contrary wind was much against our proceeding quickly on our journey, we were between Massulipatam and Narhapuhr, where we cast anchor. The little wind there was was contrary to us.

23.—We had lost sight of the coast but advanced very slowly.

24—The wind though weak in the morning, let us keep our course. We saw some Dorados swimming at the side of our ship. In the afternoon the wind grew stronger and one of these fish was caught with a three pronged iron.

25—There were many Phaetons flying round the ship, the sea was very rough. We were at fourteen degrees latitude.

26—A kind of sea bird flew across the sea; they had long narrow wings, which were white underneath, their back was brown, and round their beaks they were black. I could not distinguish whether they were a kind of Alca or Sterna. I saw now and then some balls of foam fall down from the air, they were as big as a fist, and immediately dissolved on touching the sea.

27—The air was very rough to-day and disagreeably cold, though we were under the twelfth degree of latitude and the sun was close to its meridian, towards evening we had some showers on account of the strong south-west wind. There was little to be seen on the surface of the sea, only the flying fish rose in shoals, persecuted by the birds above described,

29.—To day we had heavy showers, combined with strong south-west wind, the sun never appeared, but we supposed were advancing towards the 11th degree of latitude. In the afternoon we had strong wind combined with some rain. Some very large Albicores and Dorados accompanied our ship, we also saw some Delphen Orca and some *Succi* swim past, this made us hope that after this rough, unpleasant weather, we might soon see the land again.

30.—A strong N.W. wind, which arose this morning, combined with rain made us advance very much on our journey, but towards 10 o'clock in the morning the wind turned; we reached to day the 10th degree of latitude. In the afternoon we had again strong west wind, inclining to the south-west and showers, the wind being very strong.

31.—The air was very misty on account of the strong wind, specially the horizon looked as if it were covered with smoke, the sun just peeping through. I saw some birds of the same size as those mentioned before flying over the waves, in order to catch the flying fish as they rose in little shoals. Their size and proportions were like those of the others, also as regards the long narrow wings and their whole body was brown, and at times they shrieked as they flew along. I also saw a Larus flying round the ship. At 9 o'clock land was discovered from the mast. The sails were set and the course directed straight towards the land. A quarter of an hour later we could distinguished the land from the fore deck, it rose before us like smoke and seemed to be high and hilly.

As we approached the land we could from time to time distinguish some white sparkling spots especially close to the summit of the mountain, we took them to be chalk stone, but as we came nearer, we saw that they were a peculiar kind of fields interspersed with green.

Our Captain knew this country very well, it was the first of the Nequebar * islands, which is called "Kare Nequebar." He therefore ordered the ship to be steered towards its north-eastern coast, in such manner as not to come too near a stony bank stretching far into the sea. The more we approached the land, the more agreeable it seemed to the eye, on account of the pleasant change of wood with green fields and trees standing in thin rows between them. There was such perpetual change of scenery, that it was almost impossible to believe this island to be inhabited by uncivilized people. One field was specially conspicuous. It reached in a slope down to the sea, and there was bordered by a row of thinly planted trees, the waves beating against it with great violence; in all other parts the sea was bordered by thick trees like by a wall. After this we passed another side of the island pretty closely, this coast not being dangerous at all, and at the same time we came behind the wind. The ship cast anchor a quarter of a German mile from the shore, the water being fifteen fathoms deep. It was then 3 o'clock in the afternoon.

Necquebar. (Nicobar)

The country seemed to be level and flat for about one German mile, and was thickly overgrown with trees down to the seashore. There were some semicircular openings hewn out, in which one could perceive several houses with thatched roofs.

We had scarcely cast anchor, when some of the natives of of Necquebar came in their canoes, they arrived rowing in silence. There canoes were long, narrow and pointed, they were hewn out of trees. the best of them having a thin staff about 1½ man's height, right in front, at the end of which was fastened a little flag by means of diametrical pieces of wood, the flag however was not moveable, and stood out straight in front There were two bamboos tied to the top of the canoe, about one foot apart from each other, and at one side there was a kind of wing fastened to the same, for the purpose of preventing the canoe from being overset.

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* Nicobar.

This wing was made of two bamboo sticks as long as the eighth part of the whole length of the boat, and to these were tied two other bamboo sticks which stood out at the two ends, they were twice as long as the width of the boat and at the end of these cross sticks, another bamboo was fastened running parallel with the boat, and standing out as much at the front part, as long as the pointed end of the canoe. The smaller boats all had this arrangement, only they had no staff for the flag. There were more than eight men rowing the big boats. Their oars were lancet shaped as far as the middle and had a protruding sharp cornered point. They were thin and smooth, about six inches wide, the handle was round and short, their whole length being about four feet; they were made of a sort of brownish red wood.

Those of the natives that came on board were mostly young, expect their captain who was rather old; he had received a name from a European captain, who frequently came hither, viz: Makintosh.

Their figure is very much like that of the Malays, they had round heads thickly covered with short coarse hair, a large forehead, round small brown eyes, a flat nose, thick lips and large faces, big teeth red with Betel, and thin black beards; they were of a light brown colour. Their shoulders were large, and they seemed to be muscular, their veins were more prominent than is commonly the case with the black, their calves were very much developed, but they were all only of medium stature. Their clothing consisted of a piece of coarse blue linen, about three fingers wide, which was wound several times round the lower part of their body and taken up between the legs; some of them wore old straw hats. At first sight the expression of their face seemed to be wild, but one soon lost that impression; they showed few signs of any passion, smiled in drawing their lips up on one side, and when they felt offended they walked away without any sign of anger. The principal articles they brought with them were cocoanuts. Some of them had little square boxes the biggest of them being one foot long, they were made from the sheaths of the young leaves of the Chamœrops,* and they contained many varieties of †Amber for sale. There were some pieces of one or two drachms weight and they were wrapped in leaves, among them one kind very much resembling Benzoin but not having the same odour. As much as I could make out from the interpreter this piece like all the other pieces had been thrown on shore by the sea, it seemed to have been burnt at one end. The payment for these articles was mostly made in tobacco or blue linen. A bird was brought, one of the ordinary (missing in M. S.) which by the sailors is called (missing in M. S.). My curiosity and longing to see the country were very great, but the time passed with necessary arrangements in reference to to the ship and also in talking to the natives of Nacquebar. At last, at 4 o'clock the captain ordered the boat to be put out and I set out for the shore, feeling very glad and happy. But on nearing the land we perceived a strong breaking of the waves against the shore. We chose a little bay, which seemed to have sandy banks, because it was guarded on both sides by high cliffs. A big wave seized the boat and threw it with great violence against the shore, a second bigger wave followed, which filled the boat, broke one of the oars and some parts of the boat itself, besides terrifying us greatly. I did not want to wait for the third wave to come, but jumped down into the water, which reached up to my waist, in order to escape a greater danger, and all I had taken with me was soaked.

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* Probably a Licuala.

† Ambergris ?

The shore was rather steep in the beginning and there were many little bays, covered with a whitish yellow sand. The above mentioned stone cliffs consisted of grey coarse chalkstone. Here and there big pieces of different kinds of corals had been thrown up by the sea, among them one kind which had the appearance of many knife-blades grown together, I do not remember having seen any of this kind before. Higher up on the shore there were innumerable varieties of blue, black, red, brown and white corals, among them also the so-called "red organ." I also found a peculiar kind of very coarse sponge, and many kinds of shells were thrown up very high, many of them had been thrown into the woods for some little distance. The whole shore was not of a man's height, and it almost immediately sloped down again towards the wood.

The first plant on shore, which I met pretty frequently was *Crinum Asiaticum*, which was in blossom, and these blossoms were perfect, as they had not been touched by any insect, an occurrence very frequent on the Coromandell coast.

Scoevola grew here almost as high as a tree.

The big trees, along the coast, which we had seen from the ship, were a kind of trees with pinnate leaves having the appearance of false-varnish trees of which Kœmpfer has given an illustration, furthermore there were *Hibiscus Tiliaceus* some *Terminalia catappa* but a mistake caused by the resemblance in the leaves with those of the *Terminalia*, made me take that tree for the latter, until I saw a large branch hanging down, bearing square conic fruit, this attracted my attention more closely to this tree.*

The stem was only low, its bark bearing much resemblance to that of our beech-trees, and its circumference was hardly as thick as a man, the crown was oblong, the branches were placed without any special order, and all directed upwards, and at their ends they had many bare places, where the leaves had fallen off.

The leaves were placed at the end of the branches, very closely together, and had no stalks; they spread out and were obovate quite entire at the edges slightly turned back, smooth on both sides, the upper side glossy and light green, the lower one white and bare. The principal veins of the leaves run in opposite directions and spread out very little, being white like the principal middle vein, the leaves are fleshy and about one span long.

The blossoms are placed at the end of the branches in a simple raceme, the common stalk is directed upwards, and irregularly flattened at the sides, it is smooth and shiny, and where the stalks of the single blossoms begin it is as thick as a finger, and longer than the width of a hand. The proper flower stalks spread, they are single, round, smooth, shiny, somewhat shorter than the common stalk, and as thick as an ordinary quill, their number varies from 7 to 12. The swelling at the beginning of the stalk, continues for some time in the common stalk, its ridge is thick, round, smooth and shiny and ends abruptly where the bract begins, which is patent. sessile, oblong, smooth, shiny, bare, resembling the leaves and grows as long as one inch and a half. The blossoms are superior.

The calyx consists of one leaf, which splits right down to the base when the flower opens, then the two parts are patent ovate, with marked veins, somewhat fleshy, concave, one inch long and persistent light green. The real flower consists of four oval, concave white petals red at the edges, they are a little longer than the calyx.

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* *Barringtonia speciosa,* Forst

The stamens are very numerous, they are joined together at the base, a fleshy skin surrounding them, as in the Eugenias, they are like thin threads, smooth, shiny, milky white as far as the middle and towards the end beautifully pink, they are twice as long as the flower and fall off.

The anther oblong four plicate yellow. The ovary is situated underneath the flower and renders the stalk imperceptibly thicker and square. The style is threadlike, thicker than the stamen, smooth, shiny rose coloured, persistent, and three times longer than the stamen. The stigma is flat, perforated and white. The receptacle is umbilical, and rough.

The fruit is a square pyramid, a little longer than it is broad, at its end stands the divided calyx straight up; they are rounded, the surface is smooth and shiny; greenish white in the beginning. changing when ripe into a brown leather colour; inside it is filled with stiff, flat viscous fibres, surrounding an oval seed bigger than a pigeon's egg, which has a hard, thin shell, the taste whereof is very bitter.

In all probability this tree is the *Mammea asiatica* more especially that which Mr. Osbeck has seen near Java, only it has escaped his notice that the blossoms are borne on the ovary that the stamens are all grown together at the base and drop off independently of the flower, the stigma is flat and perforate, the fruit is described as a pear, and as being divided in to four parts. This partition is caused by the circumstance that they are crossed by the in the inferior ovary time of bloom and shortly afterwards, and so it presents itself in the shape of four rose coloured partitions, one of them generally containing a white round seed as big as a mustard seed. The three remaining partitions in all the specimens I have seen, were either quite empty or contained only rudiments of seed. It is very rare that more than one partition contains any seed, and if so, these disappear soon, and only one of them generally ripens and fills the whole fruit, I have cut many of these fruits and always found them as I described them. The fruit is a real Drupe. The sea carries these nuts to many shores of India, near Tranquebar they are picked up and used as medicine, as there is some superstition attached to them. One side of the fruit resembling a stiff brush, is used by many for polishing and cleaning metal. The fleshy part of the fruit turns woody and brittle.

Among these trees *Ischaemums* grew frequently including *I. muticum* and a new species of grass, very much like the *Lygeum* the stalk is creeping, has joints and short lancet-shaped spreading leaves. The stalk bearing the fruit is erect, hardly two inches long, the spike is hardly longer than the involucre, this is secund but contains 2 to 3 male spikelets underneath them a very tiny female one, which bears a nut or ball-shaped fruits, protruding at the upper part. I often found this grass in Ceylon near Trinquemalle, but incomplete, but here there were many specimens, bearing fruits.†

Behind the above mentioned trees grew a great quantity of *Clerodendron infortunatum*, which looked very well with their blossoms red as fire and their blood red flower stalk, their leaves were more than one foot long. Among these grew *Dracontium* with its prickly and spotted stalk and its leaves, divided into long strips ; they do not blossom at this time of the year; besides there was the common kind of Kaldeeren, § and among them another species of the same family, which was growing in great abundance ; close to the root the bark was split, but higher up it was smooth, striped in rings like the ordinary specimens. The branches were few in number and grew close to the stem only near the top, the leaves grew at their ends and formed a sort of crown, but they had no thorns like the ordinary ones but were smooth and shiny, some were more than man's height but the stem was not thicker than a thumb. There were many shrubs with big leaves, among them some which had no fructification. Upon an old Banyn fig tree, Asplenium Nidus-avis grew in abundance, *Cyperus Iria* was to be found in abundance in damp places. On some trees grew a *Boletus* hemispherical subsessile coriaceous variegated with white and ashy semicircles.

There was a shrub growing about man's height, it had only a few principal branches, which were generally five-cornered

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† *Thuarea sarmentosa*, Thou.

§ *Pandanus*

There was a shrub growing about a man's height, it had only a few main branches, which were generally five-cornered and covered with a brown bark. They had fruits looking like pears, being round, rather flattened at one end, they contained some 5 or 6 angled seeds as big as a pea ; in the unripe ones one could well recognise the three flat tyles, divided into two parts at the end. There were fewer male blossoms; they had short stalks which stood at the angle where the leaves joined the branch ; they consisted of a green calyx divided into (three ?) parts, oval, and white near the edges, they had no perianth. The leaves were oblong, smooth, soft, thin bifarious; probably it is the same plant of which Mr. Osbeck speaks in the German edition, page 267 as *Frutex baccis lbis, folas obverse ovatis*, but these were not so, and the pears are eaten there are sweet and mealy. There is shrub growing on the coast of Coromandel which is very bushy and rarely more than a quarter of a man's height with obverse cordate alternate leaves which is sure to be another species of this kind ; it resembles both the *Agyneia* and the *Phyllanthus* but its blossoms are much bigger than those described by me above. There were many plants here too, with grass-like leaves; they probably belong to the *Monandria*, but I could not find any blossom.

The *Agyneia vitis-idea* had large leaves here, but was only a small shrub. *Datura metel* and *Urena lobata* grew in the neighbourhood of a village. The greatest part of the wood consisted of coco trees, the nuts of which lay on the ground ; many of them were in a state of putrefaction and some germinated.

Near a village I found *Poa amabilis*,* *cynosurus indicus* † and a new delicate species of Poa.

As it grew dark I went to one of those hamlets, where about twenty houses, most of them with pointed thatched roofs stood on piles. The principal houses, three in number, were placed in the middle, but each separate from the other. They were built on piles about 10 to 12 inches thick, and more than a man's height. Some of them had 24 to 30 of these piles; they were bamboo, and one side was open where a bench hung by ropes, large enough to allow two people to sit upon, and so low, that their feet when sitting would touch the ground. The roof of the real dwelling house was in some cases angularly pointed, in others rounder ;

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* *Eragrostis amabilis, R. Br.*

† *Eleusine indica, L.*

very few showed a long ridge. The access was gained by means of a narrow well-made bamboo ladder, through a square hole, which was wide enough to afford admission for a full-grown man; the floor consisted of broad sawn planks of unequal length supported by the cross beams; these beams in their turn resting on the above mentioned piles. The big houses were divided into stories, the lower one being as high as two men, the upper one was lower and more like a barn.

Round about on the principal rafters, there were some bamboo sticks hardly as thick as the thumb fastened across. This looked very nice; but there were no windows at all, nor any to replace them, but the light came only through the hole holes serving them for door, therefore it was very dark. All their household implements were standing round about, mostly tied to the bamboo; that which could not be kept in this manner had been put into small boxes, which were one foot long, half a foot wide, and hardly half a foot high, and were provided with lids, which were made, as I have already said before from the partitions sheaths of the young Chamœrops leaves. These little boxes had been tied to a bamboo, which was fastened right across the room, and was therefore at some distance from the roof.

There was great cleanliness as regards the floor and the air also was very pure, not the faintest disagreeable odour could be detected. The upper story consisted only of bamboo sticks, they were thin, not tied together, and resting on the cross beams; they had turned somewhat brown through the smoke of the lamps, but I could not see that they kept any provisions there, and on the whole they do not collect many provisions. I saw some piles erected near some of the houses, they were more than man's height, two cross piles were fastened to them and here they stewed some yam roots in the open air. They had no gardens, their houses and also their outhouses stood alone *Carica Papaya.* Their weapons consisted of small lances somewhat shaped like pikes, which were made of smooth round sticks about as thick as a finger and three yards long. I saw some of them return with these kind of weapons. They had been in the wood to fetch provisions for one or two days. I did not see any fishing implements.

There were two ships there, one of them an English threemaster, the second one lying further south with two masts, it was a French ship. They were both loading coconuts, which they bought here very cheaply in order to take them to Pegu, and to sell them there with great profit.

Their women have almost the same appearance as their men, being strong and muscular, but most of them had their hair shorn off. Their clothing consisted of a blue cloth wound round their loins, or they wore an apron made of leaves, which was cut in strips hardly one line wide and reached down to the knees; they were plated together at the top and hung round their bodies in layers almost two inches thick. These strips seemed to have been taken from the Borassi or Chamœrops. Some grown up girls I saw here as well, their hair was cut off below the ear and hung loosely round their head.

However many people I saw here of different sex, I did not come across any whom I could have termed old. The only exception was a woman, apparently about fifty years old. The shortness of my stay here prevented me to make further researches and inquiries, which besides would have been very difficult considering the language and utter simplicity of the natives. As far as I could observe they were very vague in their ideas as regards years, months, weeks, days and hours.

Near one of the large houses I saw some piles; they were about ten inches thick square and two and a half feet high. At the upper end they had two holes, meeting in the middle like a cross; through them were plaited many coloured ribbons both of linen and of cloth, presenting the appearance of streamers; at their end there was a stick about as high as a man, at the end of this a piece of white linen was fastened of about two inches wide, looking like a flag; all this was surrounded by a sort of conical figure of the sheaths of the Chamœrops, so that only in front a little piece of the streamers was to be seen. I made inquiries as to these things, and they told me they were monuments for the dead, and that lately three persons had died in this house. I saw some more of the same kind of stakes which were already old, but there was not one near every house.

I saw some persons of both sexes wearing green fringes, and I inquired why they were in this manner distinguished from the others; as much as I could learn from my interpreter these were those who had held their feast of love. This is always celebrated in the woods. never anywhere else, and as a sign of this joy they wore these fringes; they were really made from long Pisang leaves split through the middle and fringed crossways, They are first worn round their neck, then across their shoulders. and at last round their loins.

My attention was attracted by a continual murmuring; I inquired into its cause. It was the singing of some women, who wanted to cure another of her headache. This afforded me at the same time the opportunity of seeing the interior of their houses. I was admitted and allowed to mount, and I found the invalid sitting on her feet, some of the women lying near her and four standing before her; one of them held something in her hand, which was supposed to be some article for fumigating, I could however neither see nor smell it. Their whole song consisted of one tone, which was taken first at a very high pitch, but by repeating it so often they slowly sank to the lowest notes, then they paused and one of them commenced again very high, and the others chimed in until they had again arrived at the lowest notes. They kept on singing in this way as long as I was there, which however was not very long, because it soon grew dark. I felt the invalid's forehead which was a little warmer than ordinarily and covered with weak perspiration. Her hands were also hot and her pulse quicker than usual, which symptoms might point to a cold in a body inclined to laziness.

The number of children that I met here was not large either, and was far smaller than what I had seen on the coast in villages of equal size. I saw very few animals here, they kept some pigs near their houses, and the pork is said to be of very good taste here, because they feed the pigs on coconuts. There were also some small hens here, and a female dog, very much like the Pariah dogs, which I had seen on the coast, and probably it was brought from there, only it seemed to have shorter legs than the ordinary kind.

There were many swallows flying about near the sea, as far as I could see however they were of grey colour, and as big as those near the coast, and therefore I doubted them to be of the kind of those that built the valuable nests.

I only saw a few parrots and not one butterfly unknown to me; only the common ones that live on the *Nerium oleander* and have the gold coloured chrysalis, and another kind living on the Mangos, being pearl coloured with black veins. One kind of moth of the species living on the fig-trees and all having striped wings. The ones I saw had red spots on their lower wings, a circumstance which I have not noticed in any species known to me heretofore.

As it grew dark I left the country where, I should have liked to stay for some days, but I feared we might not get safely through the high waves. A *Cicada* sang in the wood in a strange manner, for me it was a sad song. In the dark evening I picked up a little piece of seaweed which had been thrown on shore. We were luckier than we had feared to be as regards the starting from shore, which we left after having explored the country for one hour and a half. After one hour's journey both ways, we arrived on board at 7 o'clock.

September 1st.—Early this morning the anchors were hoisted, but hardly had we left the land when a storm combined with heavy showers of rain arose. The atmosphere was misty and one of these stormy showers was so violent and sudden that we almost perished. A new top sail was torn to pieces, the waves at the same time were uncommonly high and the whole sea like in a thunderstorm. I thanked God that I succeeded in arranging the specimens, which I had gathered on my journey.

2.—It was still stormy, but not as bad as yesterday. We were on the 8th degree of latitude N. and some minutes. The showers were less violent and fewer in number. I watched the afore-described brown seabird with the strange cry, and I often saw it fly so low that its feet touched the water. The *Exocetus** occurred frequently in these parts.

3.—To-day to our great joy we saw the sun appear through the clouds. The wind was deli cious and we sailed fast towards the Strait of Malacca. The sea itself grew calmer, and we felt great joy after all the adversity overcome. We were visited by some *Phaeton aetheria.* We were on the 7th degree and some minutes

4.—We had fine weather and wind, but it did not continue so far very long. Towards midday I saw the sea full of a purplish red kind of Medusa. It was seldom bigger than a Spanish dollar. The head was undivided, the arms had a pretty big base surrounded by an overhanging skin; they were many times longer than the whole body was wide. I have seen this Medusa

* Flying-fish.

already in different places, both on my journey to India and on those to Ceylon. There was also much green matter swimming in the water, some of it looked like a Medusa, but it was very deep under the water. There were many parts of the *Medusa porpita;* there are rarely any living ones to be discovered. Many fruits of the different kinds of Rhizophora were floating on the sea. A Diomede* was caught, which was very thin. We were on the 6th degree north latitude. The sun at his setting, showed many little cloudlets resembling scales, which presented an admirable picture of fire and purple and now and then one saw big spots of vivid sea-green colour slightly intersected by darker shadows. These were held to be a sign of storms to come.

5.—Early to-day we had heavy rains and contrary wind and were hardly able to keep our course. We saw Pullu Pera at a great distance on our right hand. It is said to be one solitary rock quite uninhabited; to us it looked like a low cupola.

6.—To-day we had alternately contrary wind, dead calm and some showers. The current brought us near the land and we could see Pullu Lada quite distinctly; it consisted of several small islands, which are very high and mountainous.

7.—The calm continued; or when there was any wind it brought showers of rain and was contrary. Towards the evening one anchor was cast, because the current might bring us too near the land. We saw many kinds of birds, which however kept at a distance. The sea was full of the seed of the Rhizophora.

8.—To-day we approached the rocks of Pullu Lada as near as one German mile. We contemplated them through a telescope because we did not wish to get any nearer to them. They were of different sizes, all were narrow and divided from each other by channels. They all consisted of rocky mountains, which seemed to be very steep at the side facing the sea, some of these mountains were long in extent and full of clefts, only a few had the shape of a cone. One among them resembled entirely the Lion Mountain of the Cape, with a high ridge which gets lower towards the neck. The peak was quite narrow, conically rising, almost every where covered with trees; except at those places where the rocks hung over or were very steep where there was no vegetation of any kind to be seen. We could specially distinguish some trees with very high trunks growing on the ridge of a long extended mountain. The ridge of the highest mountains seemed to be surrounded by clouds. The peak of the Lion mountain forms an exception and its woods seem to lie more in the valleys. The stones resemble a Petrosilex and are best observed in a perpendicular clift in one of the mountains. I think the last thing it could be was either felspar or granite, many mountains of the Coromandel coast consisting of this rock. In many places the rocks shewed lines as if they were columnar, but these lines have been caused by the rain loosening certain fine particles of the rock, and forming on its surface a kind of tufa. This is a common occurrence in rocks sloping down perpendicularly. In one place the most beautiful red showed between the stones; however beauty is always enhanced by the ardent desire to possess a thing.

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* Albatross.

There were some people on our ship, who formerly had cut down some big trees in these islands, furnishing them with a beautiful yellow wood, fit for joiners' purposes.

9.—To-day we had the same fate as regards calm as we had yesterday. The specially lucky circumstance, that our carpenter had to caulk the ship on one side, gave me opportunity of fishing diverse objects from the sea, as there was even a more perfect calm than on the preceding days. The first thing I found was a kind of Perch. I have already given a description thereof above. They looked in the water as if their backs were red, and swam about in thousands; but out of water their backs seemed to be of a dirty green; the stomach was silvery white; the head green like the back and the sides. Wherever it was green it was speckled with some silvery green spots, and it was darker on one side. The tail was broad, a little scooped out towards the middle, and had white and dirty-green stripes. The fins of the back had prickles, the longest standing in the middle; they were joined to the second of the backfins, the front part of these being longer than the end of the firstback fins; they were also sharp-pointed; all the others were soft, they were little longer than the front ones they were hardly as long as a finger, but very fleshy. Among the above mentioned there swam another kind of fish, which according to its shape was a kind of Perch. They had wide stripes across their body, were much whiter and about three times as large. There were many snakes lying on the surface of the calm sea, one kind among them being a species of *Anguis platura* and very well known to me.

I saw another kind of a rather large size, their backs were brown-green, more like eels; their head was lancet-shaped and pressed flat. Some of them seemed to have yellow lipped-mouths. Their tail was pointed and I observed that they had big spots of yellow, brown, and black colour. They came quite close to the ship and snapped at the small fish. I cannot classify them with certainty in the family of the Anguides.

I also found those Mollusks I had seen near the ship at Masulipatam at the time when we were hoisting anchors; the only difference between them being that the ones here were quite white on the upper side, while the others were reddish yellow, but I suppose this colour was only caused by the red colour of the Ghodaveri stream.

9.—There was a swimming Triton. It looked like two bundles consisting of an exceedingly thin membrane, veined, fibrous, slimy and folded together, they were joined by a short stalk looking like a thin thread. The top was rather large, and by means of this the animal could swim upwards, and also descend to the depth of the sea. In swimming all the parts fitted into each other, but when it was taken up, one could scarcely part them without breaking them on account of their utter softness. The best thing with which one could compare these parts would be two bundles of feathers, each feather being able to lengthen or to shorten itself. The body itself was conical. It had some irregular furrows on its back and a sort of crescent shaped shield sticking out a little more at one end; its under part was concave, helmet shaped, and here the first shorter tentacles were to be seen; they were covered with stiff hair on the inside and bent in at the ends, some had between the long tentacles small silvery grains, which were probably their eggs. I am uncertain as regards their number, because they were too close to each other and were very fragile. The other tentacles borne at the end of the body, and bent towards those afore mentioned, were about twelve pairs in number. They were divided at the ends, pressed flat, jointed and covered with stiff transparent hair, which grew on the inner edge. The length of these longer arms was about one inch, they were of rusty yellow colour ; the Tentacles standing opposite to these were not half as long. I counted eight pairs of the long tentacles, the shorter ones standing opposite. I found at the side of a membrane like a cover of the helmet. The base of the tentacles in pairs is knotted and they have hair at their ends and no claws.

Besides these there were still different kinds of Molluscs swimming here; one of them is cylindrical, as long as a finger and quite as thick; its surface was quite covered with lumps or short thick points. Its ends were round and full of these protruding points like the rest of the surface of the body. It consisted of many Tras put together, had rhomboidal scales, which at the upper edge were thinly indented and at the lower edge deeper cut; they were all connected by means of a thread-like gut or canal; this was shortly protruding, thicker, and was smooth and half round; it bore very fine stripes of dark purplish red colour on a white ground. Usually their bodies were divided towards the middle by a partition, the hinder half being a little thinner. Between the scales of the front part, there were many oblong purplish spots near this gut; these were flat, rolled together in spirals, were very thin and looked like flat threads. Whether these were their eggs or whether they were continuations of the big tubes I could not discover; they were however all separated one from the other. In the back part the tube ended without protruding in the least. These mollusks were extremely fragile. One could hardly take them into one's hand when the separate scales fell asunder, and they were all as clear and transparent as the best crystal. One could only discover this animal through the oblong spots and of the gut. In some of the scales I saw a sort of opening in which there was some movement discernible like the beating of a pulse.

I found a peculiar kind of Medusa, but I could not examine it with great care.

Another kind of mollusk was often swimming past the ship. I saw this mollusk sometimes as long as a foot and more than an inch wide; it consisted of a jelly which was of almost equal width except at the ends, where it was not as wide and oblique. It was transparent and white, lined with a beautiful rose pink at the edges; in the middle this edge had a slit on one side, in which one could detect some specially organised parts, as tentacula, opening for the mouth, etc., but everything was very small, and the whole animal very fragile.

10.—We had some showers with gusts of wind alternating with dead calm, so that we advanced but little. Pullu Lada began to be an aggravating view for us.

Towards the evening we saw some swallows flying over the sea; I had watched them already for some days, but I was in doubt whether these were the kind which build the valuable eatable nests.

In the evening we had strong flashes of lightning, the sky and lightning above Sumatra were very red, but the flashes above Malacca were quite white at times, at least they were very pale.

11.—Strong showers with thunder and changing winds all the morning. There was a small water-spout quite close to the ship. First of all I thought it was a volcano underneath the sea because I could not detect the origin on account of the clouds arising from the sea, for there was a black narrow column of about two feet long in the middle of some waves, more than usually agitated and white and smokelike. This smoke rose in a whirl, following the direction which the wind took; it was as high as a man and of a whitish-yellow colour. Shortly after the column descending from the clouds grew oblique and wound down in snakelike movements; it was about 1½ feet wide and darker than the other clouds. The whole phenomena lasted only half an hour. It looked like a footpath descending from the clouds; the sky round about was covered with small scaly clouds, which were not very dark. The sea had the appearance of being covered with blossoms. This was produced by slimy yellow fibres and filaments; among them were a great quantity of cylindric small bodies, looking like straw and pointed at the two sides. I could not detect any life in them, although they had almost all the same shape.

I caught the kind of Medusa I mentioned yesterday several times to-day. The body is a cone, rounded towards the end; it had eight broad furrows at the sides, the prominent parts have eight nerves, they are jointed with short crossthreads and covered with short soft hair; at the end it has an opening like a funnel; it is concave below and has four threadlike tubular arms, which are twice as long as the whole body, which itself is not bigger than the upper part of a little finger. It is crystal line white; the nerves and arms are hardly discernible; near the eyes the colour is darker, sometimes pink. In the body of one of these animals we could distinctly see through a quarter of an inch microscope:—fourteen very small crabs, squillas, or sea-fleas, some of them were still perfect, some half dissolved; four very small Mantile, and a little excrement like byssus.

The plate-shaped body of the Medusa porphita drifted past in thousands to day, but their blue arms and some parts were already rotten; all were dead. *Sprus ruber*, a fish nearly one and a half hands long and two hands wide, was caught with the angle; for bait they took a little flesh of the shark. I made the following description of it:—

The mouth had a double round lip and was of medium size without beard. The teeth were all small and regular, and the gums behind the teeth were also sharp. Above the mouth it had an oblong broad hole in the bone which was covered with skin. The nostrils were a little distance apart and round; above the nostrils there were two other holes, oblong and a little larger than the former. The cover of the gill was divided into three parts, the third part being only small and beginning at the edge of the second one; the edges were plain the second and third ended in a soft skin protruding a little. The gill rays were seven in number, their skin being white and the rays themselves were red. The gills themselves were four in number; at their inner edge, they had some double skin-like bones, looking like a comb, they stood apart, were white, bent in at the edges, rather large and sharp at the inner flat side. The first row of these bones was longer than the gills themselves, while the other rows were only short. The forehead was elevated rather flat and round, covered with a very smooth skin. The tongue is round at the end, thin, and only rough at its base.

The eyes were quite protruding, extraordinarily big, the iris was bright red and sparkling as if made from some metal, the pupil was black and big. The breast fins were longish pointed, they had thirteen rays. The fins at the stomach were shorter and had only six rays. The back was covered with fins, consisting of twenty-four rays the front ones being pointed ten the rest ending in a soft skin. The hindmost fins had fourteen rays, those furthest back were somewhat thinner and smaller; the others had red rays, the membrane between them was dark red or almost brown. The tail was undivided and had eighteen rays of medium size. which are fleshy. The scales were plain. The whole body was of a beautiful silvery vermillion red. This fish was said to have a very good taste and to be very wholesome; it is very flat, and its flesh is very white.

Another specimen of Sparus was shortly afterwards caught. It was longer, and not as broad. The head was smaller and it had besides the other teeth, which it had in common with the former specimen, four teeth which were big and conical; they stood in the upper and lower jaw and protruded on both sides. The back was also covered with fins, these being divided in the middle. Its colour was silvery white, and it had golden rhomboid spots at its sides. The cook examined it in his manner much against my wish, before I had finished examining the first specimen.

The wind and weather were almost as contrary to-day as in the days before, so that we did not advance more than three minutes in latitude and about ten in longitude.

12.—In the night a favourable though still weak wind sprang up. Early to-day I saw some brown snakes quite unknown to me, and several of those described before; they were passing the ship, but I was not able to catch any. We saw Pullu Pinang on our left; it is a very fertile island with many high mountains overgrown with trees, producing much Damar.

I saw to day several swallows, three of them flying lower than the ship, they went towards the sea; at the time we had clear and calm weather. In the afternoon we had strong showers with wind and afterwards dead calm.

A man fell from the top of the highest mast; luckily for him he fell on his left side, more especially on his hip. He had two wounds in his head above the temple. At first he seemed to be in a dangerous condition, his extremities were as if dead, he was unconscious and foamed from the mouth, etc. They bled him and gave him some other remedies, which brought him round again.

The people brought me a bird, which seemed to me to be of a new kind, though the crew declared it to be very well known and called it bubbi (booby;) the description of it follows I have placed it among the Lari. It is fully as big as an ordinary pigeon, so that I first mistook it for one, it also having the same proportions in its throat. The bill is pressed together and thin, pointed; the upper part is convex, thin, the edge round and smooth and bare at the base; the lower part is straight, with a small elevation towards the middle, as long as the upper part, but thinner. The edges of the upper and the lower part are quite sharp, both parts are smooth and black, one and a quarter of an inch long. The nostrils stand sideways almost in the middle of the bill, they are narrow, sunk in long perforations; there is a small furrow descending from the nostrils which disappears at the sides just before it reaches the end of the bill. The angle of the bill has a short round yellow seam. The tongue is arrow shaped, pointed, a little serrated at the edges, convex, cartilaginous up to the middle, whitish, the lower part fleshy and yellow. The eyebrows have at the lower part fine white feathers. above the eye there is only a small line covered with these feathers, the rest is black. The rainbow-like iris is of a dark yellow, the pupil is black and big. The first feathers of the wings are nine in number, they are a little longer than the tail, the rest are eighteen in number. The tail is divided and has twelve feathers, the two middle ones being a little shorter. The feet are short, thin, pressed together, and black. The three front toes are grown together, one palmate toe, the outer toe has four joints, the second and third only three. They are bent at the end and round; the nails are black and long. The hindmost toe stands a little upwards, is round and seldom touches the ground on which the bird stands; its nail is short. The colour of the head is light ash-grey, under the eyes it is black; the neck, the whole of the back, and the upper coverts of the wings are brown-grey. The feathers of the wings, the first coverts, the ten outer feathers of the tail are black, only the two middle feathers of the tail are of the same colour as the back. I had the good luck to catch two specimens of the same kind on one day, and I compared them.

Towards evening we had a favourable wind and left Pullu Pinang behind us; as it grew dark, the sea was very phosphorescent and from this we concluded that we should have a warm wind. The dolphins chased the smaller fish round the ship during the night, and one could distinctly trace their course by the phosphorescent light of the sea.

Soon there came another fish, it snorted as it swam along, and the dolphins left the ship; this fish kept a long time near the ship. They said it was the (F. missing in M. S.) which has the beautiful shagreen for its skin.

13.—We had very bad weather last night, heavy storms with thunder and lightning. Early in the morning I saw a snake of about two feet long pass the ship; it was very thin and had a slim little head. its colour was bright yellow, with narrow dark blue stripes across the body. Towards midday I had the opportunity of seeing another specimen of the same kind. This had only very narrow blue stripes about three lines wide, while the yellow was as wide as a finger.

I saw to-day the high mountains of the continent and also those of Pullu Parah, which we passed towards midday; although we were very far from them, we could distinctly see that they were covered with trees up to their very tops, and also more inland there were big forests. The word of Pullu is the Malay name for island. We passed Pullu Din-Din in the afternoon, having Pullu Samlong* straight before us, and Pullu Schar† at our right; the latter is an uninhabited island on the left of the continent.

14. 15. 16.—We had continued contrary winds from the East and South East, strong gusts of rain, which kept us for three days near the Sambilangs islands. (Pulau Sembilan.) I had to limit my observations to whatever object chance might lead past our ship, amongst these was the Papilio argenor. Some specimens were driven on board by the violent rain, they were somewhat different from the description Linné gives. The upper wings had black veins on the surface and near the edge there is a spot on each of them. There are three oblong clubshaped wide stripes going from the base towards the inner edge, they are of a faint bluish white colour. At the lower edge there are seven fine stripes between the veins, they are somewhat larger at the top, but very fine towards the edge of the wing, and finish off before reaching the ends of the wings, those at the inner edge are more like fine dots. All these stripes and dots are broader and whiter on the lower side. The lower wings are black on the top at the base, but afterwards they are white with black veins, which looked like an irregular wide band across the wings slanting towards the inner side.

* Pulau Sembilan.

† Pulau Jara.

16.—A scorpion stung me to-night towards nine o'clock as I had put my hand on the railing of the ship, to watch some of the flying fish. It was one of the small grey kind, which are more poisonous than the bigger black ones. The violent pain lasted till morning and the swelling three days after, though I rubbed the place very much with hot oil.

This day I often saw the above mentioned swallow coming from the Din Din and Samblons, dipping into the sea; they came singly or three to five together, seldom more. I therefore directed my attention to the swimming molluscs, in order to discover some new kind, but I did not see any others than those before described and some others known long since to among them was a big medusa, which resembled the Capellata; its divided edge was sky blue, and the inner plate purply red. Mr. Dalrymple holds the birds neststo be sea eggs. I carefully looked out for them as well but I did not see any others pass but the *Fucus Sargassum, lendigera natans triquetrus.** We generally sailed at two to three English miles distance from the islands, only this morning weapproached the Samblans as near as a quarter of a German mile, and as far as I could make out, the shores were very steep. The rocks in some places had the appearance of columns. One low rock looked from the distance like several boats with open sails; near by this rock was quite white, probably from the excrements of the birds that roosted there. A very violent rain caused the scorpions and scolopendras to leave the chinks of the ship; the former took refuge in my books, and the latter looked out for more sheltered places than those they had left.

17.—We were lucky enough to-day to leave the Sambilans islands and to approach the flat shore of Malacca which is covered down to the sea with a peculiar kind of tree, standing erect and only having single stems. All had small crowns of equal height, so that they looked like reeds,† behind which the crown of high trees stood out. Behind these high trees the mountains rose. They were high, jagged and stretched out for a long distance; they were surrounded by a bluish haze, and according to my opinion they surpassed in height all the mountains I had seen

† No doubt *Casuarinas.*

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* He evidently expected to see the edible swallow's nests floating in the sea, in the form of seaweed. The *Facus Sargassum, etc.*, is the common *Sargasso* so abundant in our seas.

before. The water of sea was muddy here and had a whiteish green colour. We cast anchor towards the evening on account of the calm, and during the night I saw from time to time large phosphorescent spots in the sea; sometimes they were stripes about two hundred feet long and one and a half feet wide, which consisted of innumerable small mackerels swimming in shoals, and when they came so close to the ship that one could throw something heavy at them, they all jumped above the water. One must recognise our Creator's providence specially in the circumstance that He has endowed all animals swimming in the sea with this phosphorescent light so that in the lower depths of their dark element theyshould be able to see whatever is near them.

Towards evening a little swallow had flown into our captain's cabin. Captain Leith as well as his servants, who were natives of Siam and the coasts of Malacca, declared it to be one of those that build the celebrated nests, and that it was of the same kind as those which had almost daily passed us, as they flew deeper into the Straits

18.—We continued our journey with fair wind along the coast of Malacca. The wonderful aspect of the equal-sized trees growing half in the sea water, and being quite unknown to me, increased my wish and longing to study these trees, but in vain. I had to content myself with looking at them through an excellent telescope, a present from the Duchess v. P. Sand. I also saw some small shrubs here and there. My further occupation was to stuff my swallow. The description I have given of these birds only deviates from that of the others in so far as it had a rust coloured throat, which near the breast changed into a sort of dirty black, because there were some black feathers intermixed. The abdomen is white and shiny and soft, the rest of the body is black, on the back and head with a blue gloss over it. The feathers of the tail are twelve in number, the two middle ones being the shortest and having no spots, the other feathers had each one white spot on the inner edge near the end, the outer feathers having the biggest spots; when the feathers lay together the spots formed a sort of band across them, which disappeared at the end of the shortest feathers. The two outer feathers were much longer than the others, and narrow at the ends. The whole bird when I had killed it weighed zij Fij P.M. We were three German miles distant from the shore when the bird came to the ship.

The high mountains which one could see from a great distance belonged according to our captain to the territory of a king ruling this country; his kingdom is here called the Rhomboish* kingdom, and the coast had been taken from him by some rebellious subjects, who had made themselves kings in opposition to him. It is called the Buk kasis in these parts and specially known under that name at Borneo.

We passed one part of the coast where a cape was projecting, and where many of the afore-mentioned trees grew in the water. Our captain, who during several years had had some commerce on this coast, told us that here a large stream poured its water into the sea, and that one could get the best cane here very cheaply, but that the inhabitants were the greatest scoundrels and murderers, who made commerce very dangerous.

19.—Early to-day we had strong northwesterly wind, combined with rain and a thick atmosphere, we passed the sand and mudbanks of Sallango (Selangor); we could not see the land, but fortunately we perceived the waves breaking at our right. The sea was of a whitish-green colour which was caused by the mud. Towards midday the weather cleared up and we could discover the mountains round the harbour, but soon after we had dead calm, so that we advanced scarcely at all. Afterwards I could see the shore, from which we were only about three quarters of a mile distant, but I could not detect any of those trees which I had so often seen yesterday those that grew in equal height. At least if any of them were there, they were not as high and intermixed with other trees; they grew deep into the water. My captain however disagreed with me, as he said that those trees could only have been Mangrove trees, and not as I had imagined Rotan or cane. They must be a kind of *Rhizophora*, as I concluded from the appearance of their fruits, which frequently drifted by.

20.—With unfavourable wind, yet beautiful weather, we came within a mile's distance from the harbour of Selangor, which is a good place for trade and the residence of a Malay king. At midday we cast anchor here. The trees which grew in such equal size were also here, but only in some places along the coast. Several sea snakes passed the ship; they were about one foot long and had a thin head and body; the head, the back and the tail being pitch-black, the sides had brown and yellow spots. I tried to catch some of them, but without success.

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* Rembau.

With the help of the current and favourable wind, we passed the afore-mentioned harbour in the afternoon at a distance of half a mile ; we had to pass several steep cliffs, which stood out of the water. Little grew upon them and they looked as if rivetted together, because there was some red ochre ; only one of these cliffs was named in the sea-charts, none of the others were marked at all.

Shortly before sunset I caught a snake two and a half feet long in my net, but the net was too small and our ship moved too fast, so that I could not keep it. Its colour had been purplish red which was divided into lozenges by some black lines. The stomach was white.

A great quantity of the seed of the *Bontia* and different kinds of *costia*, which had all germinated drifted by. The anchor was cast at three o'clock on account of the muddy ground.

21.—Before day-break the anchor was hoisted again, because the current was favourable, but at the entrance of the strait of Callay (*Klang*) it had to be cast again because the wind as well as the stream were against us. At one o'clock in the afternoon the anchor was hoisted again, and the rapid stream which passes the straits had soon taken us up and carried us through the wind would have helped us on very little. The whole channel is not more than 500 steps wide in most places, in some it is even narrower. The islands are all very low and consist of a grey mud, but they are overgrown with creepers and those trees of all equal height, most of them, as far as I could see, were *Rhizophora*. Here and there were some trees, which seemed unknown to me. There was specially one kind of palm, which had no stem at all, but its leaves resembled those of the cocotrees, only the separate leaflets were broader and flatter.* There are many small channels traversing these islands, which were not marked on the charts, but they enhance the beauty for those passing by. In the middle of this sound there was a wider channel branching off, forming the island Pullu Loometh.† The unfavourable wind and stream forced us to cast our anchor towards evening ; we were still in the mouth of this channel.

* Nipa fruticans, L.

† Pulau Lumut

The birds and animals intoned their evening song, rendering our involuntary rest agreeable.

22.—Early before daybreak the anchors were hoisted and we continued our journey; but the wind was weak and contrary and we did not advance more than half a German mile outside the mouth of the channel, so that at 9 o'clock in the morning the anchor was cast again. I was lucky enough to persuade the captain to let me go on shore. On account of the current I chose a part on the island Lasmet* whither a boat took me. This small journey, scarcely half a mile from the ship, took a considerable time as the stream soon turned against us and brought us back into the channel, so that we only arrived at 12 o'clock.

The shore was rather high and covered with sand. Above this sand was a layer of grey clay, which was very soft and sticky; the soil higher than the present level of the sea was very uneven, full of holes and had been everywhere perforated by the crabs There were many fallen trees near the sea, the stems of some of them were incrusted with Anomia.

The first plant I came across was a big *Osmunda*, which might have been the variety *regalis* of Mr. Arch. v. Linnè, but its stipes had prickles at the base, the pinnæ are broad at the edge and creeping, much longer; there were only a few leaves and the whole plant was of a man's height; the roots were thicker than my hand and full of concentric spiral scars; the colour was black.† I hardly saw any other trees than *Rhizophora*, There were some climbing plants, which however had no leaves, because the rainy season had just begun on this coast. I searched very much for some kind of grass, but saw none; some grasslike putrid leaves were lying near the shore. I saw a great quantity of those palmtrees with the leaves which resemble those of the coco tree and was lucky in getting many of their blossoms. *(Then follows a long description of the Nipa palm which it is unnecessary to insert.)*

The only big bird I had time to see was a Malabar bird, besides some medium-sized Tringas and some sparrows; I caught some beautifully coloured crabs, one of their claws being very big.

They gave us a signal from our ship, by firing off a cannon, and so I was obliged to stop further researches, and we had to hurry to reach the ship, which meanwhile had spread its sails; I had only been on shore for half an hour. With favourable but weak wind we came as far as the Parcellac mountain, where we cast anchor.

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* Evidently Pulau Lumut.

† Probably *Acrostichum aureum.*

23.—After we had remained here for the night we continued our journey with pretty favourable wind, which however soon changed; we advanced but little and hardly reached Cape Rochard, (Rachado) where we had to cast anchor again.

24.—Early this morning the anchor was hoisted again, and we passed the point of land called Cape Rachado, and could see the trees on the coast of Sumatra. There were many big sea-birds here, but they kept at a distance. We had the small islands in front of Malacca, called the Water islands, just before us, and passed one of them on our left. Its soil seemed to be quite red; it is here that the natives get the red colour with which they paint their ships. At about ten o'clock we cast anchor in harbour of Malacca, where the custom house was filled with Chinese, and a great quantity of sacks filled with sago were lying in the street.

The greater part of the first large lane, which one enters as soon as one reaches the town, consists of Chinese houses and Chinese booths wherein they offer diverse things for sale; only few of them had exhibited anything remarkable, as porcelain etc. Some of these booths were chemist's shops. In this street there was a large quantity of Cattu Camber* spread out on nets to dry; this is also made here but only the cheap kind. They assured me that the Terra catechu was better made here than anywhere else, because the plant grows here in greater abundance. We took lodgings in a house, where the English are generally in the habit of staying. This, like most of the houses in which Europeans live here, was built in the Chinese style, consisting of two stories and a protruding roof, only the stories were higher in this instance. There was a long courtyard descending towards the sea, it had small rooms on both sides, mostly used as stables, kitchen and accommodations for domestic animals; it was called Gmor. The sea was dammed in by some piles, which were about two men's height and two arms thick; they were driven into the ground slantingly. Towards the middle this courtyard projected into the sea, and there had been a cool dining-

* Gambir.

room built on strong poles. Nearly all the houses facing the sea were built in the same manner. Before this dining pavilion grew on either side a big tree; the leaves were bifarious, on long thread-like alternate stalks, the leaflets were oval, pointed and finely ribbed. The pods, which were ripe now and still grew in great abundance near the top of the tree, showed them to be a *Pterocarpus.** There were no blossoms on them now, but they resembled those trees which I had seen near Tofuapaduam in Wannis, and the Malays also told me, that a red sap flowed out of them if one cut a hole into the tree; this sap was regarded as a great remedy here, as well as in Ceylon. The short time did not admit of any further researches concerning these trees.

The great fertility of these parts is shown in the great variety of fruits with which their markets (Bassore) are filled. All these fruits were of extraordinary size and very agreeable in taste. Many Chinese also brought fruit to the different houses in large quantities, though this is not the time when most fruits are ripe.

The best of fruits were two kind of Durions; one of them† was of the size of an apricot and had a smooth dark brown rather fleshy and astringent peel which was about two lines thick; at the upper end of the fruit grows a star, consisting of five to seven parts with blunt edges; this star shows into how many parts the flesh of the inside is divided. The fleshy part is ball-shaped, has sometimes seven, but more frequently less, divisions; each of these divisions is round at the outer side and the inner one has the shape of a two-sided wedge, all hang together by a spongy kind of white receptacle. The fleshy part is milky white in appearance, little transparent, and of a substance easily melting in the mouth; it is agreeably sweet mixed with very little acid. Some of these divisions contain a kernel, which is almost round, a little flat at the sides, green, but covered with a red membrane which has a bitter taste when it is bitten through. Those divisions containing the kernels are bigger than the rest; they seldom have more than two kernels in one division.

The second kind has an ochre colour and is covered with soft delicate hair; they have neither a calyx nor the star at the top; their taste is somewhat acid and not as nice.‡

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* The Angsana. *Ptrocarpus indicus, L.* Big trees of which can still be seen in Malacca.

† Evidently Mangosteen.

‡ Perhaps Rambai.

A third kind was only half as big and was called Rangostan.* The fruits were not quite round and covered with long green fibrils, which were very much like prickles. The peel was red, the fleshy part of the inside like that of the others; they were not much thought of and only eaten by common people. There was still another kind of fruit with a peel like the second kind I mentioned, mangostan or *Garcinia celebis;* the fleshy part was the same only it had no divisions and only one seed, which was round, compressed with a big style at one side; it had a chestnut-coloured peel.

In the afternoon I went out in spite of the rain, but could make very few reseaches on that account. The only remarkable thing I found was a *Syngenesia*, the calyx of which resembled that of a *Chrysocoma*; the blossoms themselves were reddish, obversely oval, with serrated edges, it was a shrub of about half man's height and grew in marshy soil.† I found there also two *Cyperi* which were new to me, and the *Leonurus* with the divided leaves; *Cassia occidentalis* grew frequently along the hedges.

The governor Abester, who was supposed to go to Tranquebar, and whom we thought already lost on the coast of Coromandel, had happily arrived herewith his family and belongings; they had contrary wind on their way, which had detained them. He was obliged to stop here on account of the rainy season on that coast.

25. To-day I paid my first calls on the surgeons, who are the only doctors here and are all Germans. I wanted specially to see Mr. Werth, who has lived here already twenty years, and was well acquainted with these parts. therefore asked him about the dragon's blood, and he assured me that it was often made from a kind of reed bearing red blossoms, which frequently grows in Sumatra, specially in a place where the Dutch have an office and a district called Liat. He told me that the sago was not made here but was brought hither from other places, especially from the island (missing in M. S.) and from Sumatra, but that there were also some sago trees in the wood of this neighbourhood. The best mangosteen trees grow in the wilderness, specially in mountainous parts; in the gardens they lose their delicious taste.

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* Rambutan.

† *Pluchea indica.*

The most frequent illness here is cardialgy, of which many people died; dysentery was not as dangerous here as in many other parts of India, specially Batavia. There were few contagious kinds of illness, and people leading a regular life grew very old.

Rays de Madre de Deus was well known here, specially among the Portuguese; it is sent from here to Goa, and grows pretty frequently in the jungles. The hospital had at present about twenty inmates, most of them suffering from the venereal disease. I found many kinds of *Filices* near the old walls of the town only few of them had any pericarps left; among them was *Polypodium lanceolatum.* The *Agyneia* generally very big on this coast, only was very small here ; near the wall grew *Oldenlandia*, *Urtica interrupta*, *Bryum murale*, *Hypnum sericeum*, *Eclypta ;* at the side of the lane grew a *Conyza* which was unknown to me, and *Morinda citrifolia* was in blossom, although it was not two feet high. There were few kinds of grasses in bloom, only *Scirpus corymbosus* and *Cyperus* were among them. *Paspalum*, *Agrostis cruciata*, *Cynosurus indicus*, and the new kind of grass which I had found in Madrepolam grew here, and also the species of *Aira* with a long compressed panicle I found here, and it was in bloom. Although the ground was covered with green grasses few of them had reached their perfection on account of the rainy season, which was just beginning.

In a garden I found the kind of grass the roots of which when dried smell so agreeably, they furnish the Tenschaurian fans and the roofs of the Palanquins. Generally they extend over much land near the rivers hindering the Palanquin bearers very much. I have already described it before and called them *Andropogon echinatum.* The blossoms have no awn. The male ones as well as the hermaphroditical spikelets are twisted a little at the end and at the side they are overgrown with tiny prickles. The anthers are yellow-green, and the pistil purplish red.*

In the afternoon I went to the north part of the Tranchur, where one has many gardens on one side and the harbour on the left. There was a beautiful smooth and even avenue, consisting only of big *Pterocarpus* trees. They were all covered with foliage, but had not a single blossom. The branches, which bore the alternate ovate leaves, bent very much because they are thin and threadlike. Most of their stems were covered with parasitical plants, either with a kind of Contorta *(Apocynaceæ)* unknown to me, which had round leaves and *linear follicles* grooved at the base, and beaked, but no blossoms, or they were *Filices* or *Orchids* There were some others, which I was not able to classify at all.

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* *Andropogon muricatus* Retz. The retiver.

The sea coco tree I saw in the garden formerly belonging to a curious man, who had been a great friend of science, a Mr. Bartolmei de Vents, who had died a short time previously. His death is the more deplorable as, besides his riches and his love for science and the knowledge he had acquired therein, he possessed much land here, and was highly respected by the Malays. who generally are so treacherous and dangerous. A nut of this sea coco tree was still lying on the ground and out of it had sprung a root, descending into the ground. but no stem has as yet formed. The leaves being still young and not yet divided into strips resembled those of the ordinary coco-trees, only the folds were much narrower and the leaf itself wider than those of the young coco-trees; the tree was three years old, and a second one, which was full grown had died the year before. *(Lodoicen seychellarum)*.

Cynomorium cauliflorum[*] had fruits and blossoms; the people said that if they did not enclose the tree in matting or a kind of hedge, so that it was dark, it was ashamed to bear fruit therefore all the stems were surrounded with cocomats. The fruit is eaten. In another garden, close to this one, the possession of a Portuguese widow, I saw several trees of the *Theobroma Cocoa* They had many blossoms and fruits, which like those of the *Cynomorium* grew on the stem and the largest branches in short fascicles; the owner promised to give me many fruits and some young plants. In a little garden she had some plants of the blue *Capsicum*; all of this tree was blue, even the fruits were of a blue black. *Piper nigrum* climbed upon an old stem of a *Maringos* tree and had blossoms and fruits; *Piper Siriboa*[†] grew along a hedge. There also was a plant with beautiful whitish linear leaves, but without blossom, they called it the Chinese vermouth.[‡] There were also some Dianthus with double blossoms. *Dolichos Soya* and *Dolychos* with a winged pod had been planted

[*] *Cynometra Cauliflora* (the Nam-Nam)

[†] *Betel pepper.*

[‡] Probably *Artemisia*

in some places. *Gomphrena globosa*, *Celosia cristata*, *Amaranthus tricolor* grew at the door leading to the big garden. *Pancratium Leylanicum* grew here wild among the trees. In an avenue of Areca trees I found near the root of one of them an unknown kind of palm. Birds had probably brought the fruit hither, and had eaten it on one of the trees, whence it had fallen down and had grown there. This palm was very frequent here, but none of them had more than two or three leaves, which were all fan-shaped with blunt ends. The stalk of the leaves was prickly. I was told that they grow often in the jungles but do not grow higher than a man. They are of no real use.* Wherever I went I saw parasitical plants and I also found some kinds of moss. I was sorry not to have been able to find any thing more of interest in this place so favourable to natural science, but I overcame my disappointment reflecting that this was an unfavourable season, and hoping to be able to revisit the place soon under more favourable circumstances.

The soil here consisted of a fertile black mould. Many of the gardens lay near a swamp so were partly swampy themselves; they all lie low not far from a river, which empties itself into the sea between the town and frequently floods the neighbouring country. I had no opportunity to see any kind of stones and there was nobody here who might have given me any information concerning them. The sea shore was very muddy and I could not go to the islands for want of time.

26.—We had to pack our things together and towards midday we left the country; however the wind soon changed and was contrary so that we had to cast anchor again.

27.—Quite early the anchor was hoisted, and we passed the islands pretty closely; they were all quite small and consisted mostly of stones, but neverthless they were covered with trees. Our joy soon ceased, as we lost the favourable wind till nearly evening, and the anchor had to be let down, as the current would otherwise have drifted us towards the islands. In the evening we had much thunder and lightning from the direction of Sumatra, but only a small part of the thunderstorm was driven to us by the wind.

28.—We sailed a little to-day with the help of the six hour's current, but the wind was entirely contrary. We saw the mountains of Moor (Muar) and further on Cape Formosa,† the anchor was soon cast, as the current was against us. As soon as it grew dark we had lightning all around us.

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* *Licuala.*

† Batu Pahat

29.—During the night the anchor was hoisted, and at daybreak we were near the coast of Sumatra and the island Pullu Rinpet, but we had to keep our ship off on account of the coast being dangerous in these parts. Before evening we succeeded in reaching the land and we cast anchor between the mountain Moor and Cape Formosa near a point of land stretching out into the sea.

30.—During the early hours we sailed on, making use of the weak wind and the current. but soon afterwards we had contrary wind, which was followed by perfect calm, so we remained near a place which was indeed called Formosa, which however for us was very inconvenient. We had strong lightning all around.

OCTOBER 1.—We passed the Strait of Malacca. The weather did not change; we had some wind in the early morning, which however passed away very soon.

2.—The anchor was hoisted to-day, because we had favourable wind; we passed the island of Pullu Pisang at about one mile's distance. Towards the afternoon the anchor was cast again, because the wind was contrary. Much seed of the *Rhizophora*, *Fuci* and other seeds drifted past our ship carried by a strong current and also some single leaves of the *Acorus Marinus Rumph.**

Then there was some water of a bright-red colour floating past the ship, forming either large veins or spots. Some pails were let down in order to obtain some of this water. I took much trouble to discover the cause of this red colour. I strained a pail full through a piece of new linen without finding anything but a few flea-crabs. Under the microscope which was a quarter of an inch I saw many *Volvoces polymorpha*: at times they had the shape of a bell or that of a triangle and sometimes they had a tail. All of them were of a dark green colour.† I could not find out whether the cause of the red colour was some kind of seed floating on it or some solution of gold particles which are formed in the mountains and at this time might be washed down by the heavy rains.

We could not advance in these days on account of the contrary wind and so we crossed between the head land Mount Formosa and the Bisangs islands. These islands are four in number,

* *Enhalus acoroides.*

† *Infusoria.*

they are very high, covered with trees and intersected by small channels. The most annoying circumstance for our journey was the current being against us. In the evening we had happily advanced so far that we could cast our anchor at the side of Pullu Bisangs.

4.—We were lucky to-day and advanced quicker than we had done since we were in the Straits of Malacca. We passed the low country, which on the Malay coast is intersected by natural canals and overgrown with high trees even down to the water, as in Salingor and Pullu Calang. On our right we had the northern part of the mountainous islands called Pullu Cariman; in front of them there were two dome-shaped islands, which only consisted of rocks and yet were overgrown with trees. They are called the "Two Brothers," in sea-charts. There was a third smaller island, which was not marked upon the charts. In the evening we passed the low island on our left, which is called Pullu Cocob (Kukub) and as the rapid current was against us, the anchor was cast at the cape Tanjong Bouro.*

The common sea weeds passed our ship oftener than usual; they were only *Sargassum.*

5.—The anchor was hoisted quite early this morning, and the wind, which at first was weak, grew stronger and more favourable. Two small Malay ships were in front of us, but they soon changed their course and went deeper into the strait between the islands. After we were at some distance from the Cariman islands, we passed a great number of islands, but only few of them were marked on the charts. We left the route to Batavia on our left and passed some very low islands, amongst them the so-called "Three Islands," which are quite low and only recognisable by three trees growing upon them. At their north-eastern side the soil seemed to be red. A little further on we also saw the island which is called the red (missing in M. S.); it consisted of red sand, and there was a little grove on it, which looked very charming and shady. There grew no other trees on this island, which also was low.

The rest of the islands were higher; the shore consisted of red sand and further inland they were stony with easily discernible strata, and few of them had, higher than the water would rise, some quite white strata.

* Tanjong Bulus.

In the afternoon we passed quite close by two small islands, which the English call the Rabbets and Cunni (Coney),* on account of the similarity of their shape. They looked like an oblong vault and one of them had on one extremity two trees ending in a point, which represent the ears. These trees seemed to me a kind of cedar. I could study the strata of these islands more closely. They seemed to consist of a fine sort of stone with a white weather-beaten surface. My captain told me he had often seen this kind of stone in these parts, and that it varies in colour from red to yellow, sometimes even to black. He said they were friable and smooth and could be cut. I could not decide whether this was the Chinese soap-stone or not.

To my great astonishment I saw very few birds in these parts; only now and then the kind of swallow I mentioned before and only one Malabar bird near the Rabbets islands. Through my small telescope I saw a kind of palm unknown to me on the Barn island. This island is very rocky and only separated from the Rabbets by a narrow passage.

We wished to reach the island of St. John to-day but the strong current and weak wind forced us to cast anchor. We saw three Malay rowing boats lying near one of the islands. Towards evening we met a ship returning from Rio to Bengal, which was commanded by a captain Brown.

6.—Towards midnight the anchor was hoisted again. The very strong current took us happily past the islands and in the afternoon towards three o'clock we left the Strait. We had passed the cape Romania, and left the three small islands lying before it on our left. Shortly after we passed Petro Blanco, which is a low rock; it is covered with the dung of birds. I saw often a great quantity of birds flying past, they resembled our ducks both in size and in manner of flight; I never saw this kind before. On the high cliffs of Romania, which are overgrown with trees, I saw a beautiful red blossom on several trees. Though I could distinguish their size I could not distinguish their shape. The shore was also formed of red sand. We passed a ship that carried the Danish flag.

7.—We lay at anchor during the night on account of the calm and the contrary current, but at day-break the anchor was hoisted with favourable wind. At eight o'clock we saw Pullu Tingi and

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* Now Raffles lighthouse.

Arop,* which from far appear to have very high mountains like those on Cape Teneriffe, but as we came nearer it appeared that they were not high at all in reality. Shortly after we saw the Pisang islands and towards evening Pullu Timon (Tioman). Towards midday we had a strong shower of rain, and two swallows could easily be caught, as they had got wet. One of them was a little bigger than those that build the nests. The back was grey, strewn with small white specks; the wings were rust-coloured underneath, the rest was dark grey. The smaller one was not like those that build the nests. At the side of the bill it has some stiff bristles. It had eighteen feathers in the wing, nine of each kind, and twelve tail-feathers, which were nearly all of equal length, they were light grey at the outer edges, except the two middle ones. It seemed to be quite a young bird, because it shrieked, when it was touched. The edge of the bill was yellow and the palate and tongue were of the same colour.

A two-mast ship sailing under the Danish flag passed us, just after we had first seen Pullu Aar (Aor).

8.—During the night we had almost entire calm and for a long time we could still see the mountains of the islands Tingi, Pisang and Timon. The first mentioned soon disappeared from our sight, but the others, consisting of several islands, were still visible during the whole day I stuffed the two birds and renewed my description of the *Hirundo esculenta.*

I had a severe swelling at my left foot, which was partly caused by a cold, partly by the fatigues of the journey and had been aggravated by a fall. This made me somewhat anxious. We were this afternoon 2 degrees 49 minutes of N. L.

9.—During the night we had had calm as before, and Pullu Timon was still distinctly visible, although our captain knew we were eighteen leagues away from it. Some rain showers changed our favourable wind for some time, but it soon turned round again. The air seemed to be cold, but we still had twenty degrees above zero according to Réaumur's thermometer.

12.—During all these days I had to remain in bed on account of a phlegmon (swelling) on my left foot, which at the same time had swollen as far as the knee, on account of an œdeomatic swelling. To-day I could get up for a little while, and saw a great many *Medusa porphita* passing, which had spread out their blue tentacles ; among them were some of extraordinary size, the plate-shaped body alone measuring one inch and a half in diameter. This body had fifty-two ring-shaped stripes ; I caught some of them. Some sea snakes also passed our ship and also my swimming triton, but not as often as in the Strait of Malacca. At midday we were at six degrees twenty-three minutes N. Lat., and our captain directed the course of the ship towards the coast of Cambodia.

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* Aor.

13.—We had much calm, intermixed with small rain-showers. The water of the sea, which had been so clear before, grew less transparent and darker. We must have had the current in our favour, as we had advanced a whole degree towards the North. A swallow kept up with the ships ; it was the edible swift, and I observed that the white stripe across the tail is very characteristic in this kind.

14-15.—During these two days we had alternate calm and rain showers, with some West wind. We were between the seventh and eighth degree of N. Lat., and our captain reckoned to be near the place were the south-western cape of Cambodia projects into the sea. Here it was that the sea was covered with millions of Medusa, specially on the fifteenth. The cause hereof, they said, was that the currents from the Cochin-Chinese and the Cambodian coast meet here. As I touched the lower part of this Medusa it stuck to my finger by means of the numerous sucking tubes which are short and almost flesh-coloured. Besides this there were many kinds of the crystalline slimy Medusa, among them one having the shape of an oblong sack, with five rust-coloured round spots. The English are said to call this Medusa the Sea-Egg. The spots were of the size of a peppercorn, and the animal was about three inches long and about one and half inch in diameter. I could not obtain any unbroken specimen. A second kind resembled a porpoise. The back is convex, smooth, and consisted of a thick hard crystalline slime. The edge consists of a rather thin transparent membrane and has between eighty and ninety milky tube-like stripes, which at the outer end were somewhat swollen, and at times looked like knots (this however is only momentary, because they again become pointed when the animal stretches them out). There is a second membrane in the disc, separated from the first by a wide bare ring ; this second membrane is also striped with milk-white stripes and is indented at the edge. The largest of these Medusas was a little more than two inches in width and had one inch in diameter.

16.—To-day the Medusa porphita had entirely disappeared, but the slimy crystalline Medusa appeared still in great quantity; some of them I caught. Among them was also the oblong obtuse angled one with the eight purplish stripes, which I described in the Strait of Malacca. What caught my attention most, was a great quantity of little phosphorescent bodies, which floated in the water at one and two feet depth. Their size when seen in the water seemed to be that of a small pea, and they varied in colour. Some were golden-yellow, others green, but most of them were blue. I caught some with my met; to all appearance they were a kind of Scylla, and consisted of a very fragile crystalline substance. They were oblong, had four projecting lobes, and rounded furrows on the upper part, some phosphorescent lines were marked across them. In front they had a long conical trunk, which was longer than the four lobes; along the middle of this trunk there was also a deliate green phosphorescent stripe. The real phosphorescent part was in the middle of the body; it was oblong, flat, a little convex on one side, about two lines long and one line wide. It retained its phosphorescent quality even after it has been been removed from off the animal. The whole animal was one inch long, the lobes projecting about $\frac{3}{4}$ of an inch.

I made a peculiar observation. Among the Medusa which I had caught, there was a small fish (Ostracion) about half an inch long. I put it among the Medusas and at first it was very lively, but by degrees the slime of these animals enveloped it, and in about one hour its skin, otherwise so hard, had quite dissolved and the fish began to be transparent, more like the Medusas. It seems therefore that this acid slime has been given to them by nature to conform their food to their digestive capacities, because they have no special organs for this purpose. It is just this slime which so easily produces an inflammation on the human hand. The slime of the blue ones has this faculty in particular.

Since we have entered the Chinese sea, we are continually sounding with the plummet, especially since three days the water has not been deeper than fourteen fathoms; and the sounding consisted nearly always of sand mixed with mud. Towards evening some red sea-perch were caught and a large amount of

Silurus Cattus, which the English also call Cat-fish. There were some small shells in the sand as Arcas, Spirea and some others. There was a piece of *Ossa Sepia* (Cuttle fish bone) nearly all devoured by some animals, which stuck to it still and were very small, hardly one line long and $\frac{1}{3}$ of a line in diameter. They were cylindrical, rounded off at both ends, smooth and yellow. They seemed to contain some other body, which showed through the smooth horny skin. They seemed to me to be the eggs of some shell fish. I also found some very small *Turbinites* (Turbos?) upon them. About midday we were on the 8th degree and twenty-five minutes N. Lat., but however we could not detect any trace of the Cambodian coast as yet.

17.—We passed to-day the Pullu Pansangs islands* quite close. We sailed between their inner side and the coast of Combodia, the latter however we did not see before the afternoon as there was a dense mist, specially over the land. These were the first islands at the entrance to Cancao,† which formerly was a very good place for trade in Gummi-Gutta (gutta percha), wax, sugar and gold, but since the Burmans have ruined it, the place has lost its importance, as people have left it, and little is now imported or exported.

Towards sunset we were met by a very strong current coming from between the islands, which brought with it many thousands of the Medusa Velella; we deemed ourselves at about two miles distance from these islands. We cast anchor in about fourteen fathoms of water on account of the calm and contrary current. The Boobies found their supper in the mud, which contained many fishes as well.

18.—We continued our journey with weak wind but a strong favourable current. There were many things passing our ship, specially sea-snakes, but they were only the common *Anguis platura*. One of them was asleep, it had rolled itself up in a circle, was puffed up and so floated above the water, the whole circle it formed was only half a foot in diameter, while the real length of the snake was two feet and a half. I had almost caught it in my net, which the captain himself was holding, when to my great annoyance a wave lifted the ship higher, so that the edge of the net touched the snake, it woke up with a start and was gone. I also caught to-day *Hippocampus* and *Ophidion*, but both

* Pulau Panjang.

† Kang-kao.

were only small; also a large quantity of the common *Actinias* (sea anemones) which had been detached from the cliffs; they were of an ochre-yellow colour and were as thick and long as a thumb.

A new kind of mollusc passed our ship very frequently. It was of a hard, slimy, transparent substance, and had a large red spot on the upper side, which at times stood out above the water; it was as thick and as long as the thumb. The real description which I made of it is as follows:—

The whole body is a tube, slightly thicker towards the middle. The front part or mouth consists of a large opening. The body is as thick and as long as the thumb, slightly thicker in the middle. The front part or the real mouth is a large opening, so large that a small finger fits in. This mouth has two thick lips curving in the shape of a helmet, they are thinner at the angles, and the upper lip slightly projects over the lower one. The back or upper part of the mollusc is thick and has a little raised part in the middle, and the sides in this place are also thicker and harder. This raised part contains the real stomach. The lower part of the mollusc is not quite so thick, yet widens in the middle. The sides consist of a thinner and softer gelatinous substance. The back part is a tube thinner and longer than the front part; it has plain edges which are very thin. The upper lip has inside a thick round protuberance, which looks like a second lip; at the lower side it has small furrows crossing it. After this it widens and has at the top a trumpet-shaped tube, which was fastened at the upper part by a gelatinous membrane. It has a large opening in front, but it gets thinner and curves gradually upwards, and at last forms a membrane with which it encloses the front part of the stomach, where it forms a little protuberance, has small stripes crossing it and is of a milky colour. The front part of this tube divides into two rounded lobes, which could move freely and could alter their shape according to whatever position they were in. The size of the opening of this tube was about as large as a quill and the thinner end had hardly half a line in diameter. It had many stripes on the surface which however did not affect the inner side, as many particles of dust and other things were freely and quickly expedited to the stomach, without being stopped on the way.

The stomach, as I have already said, is fastened to the upper side of the mollusc; it is quite round and has the size of a grey pea, to which it also resembles in colour, but when the mollusc swims in the sea, the stomach seems to be red. It consists of a brownish-red skin; in front it is enclosed by the aforementioned tube, and is hardly discernible; at the back there is a large projecting transverse slit turned upwards, from which yellow-green excrements are frequently ejected. I could not detect any finer organs, because the whole body was transparent, except the region immediately round the stomach, which was of a dull milk-colour; there also I could sometimes discern very fine tubes, moving in a snakelike manner In some specimens. I detected a long hairlike tube, running along the back and leaving tiny red spots. The whole body consists of a crystalline hard gelatine only the stomach is brownish-red.

When this animal swims in the sea the stomach is turned upwards, because it is growing at the back, and its mouth lies lower. The back opening of this tubular animal is more horizontal; it constantly draws in much water through its mouth, whereupon it presses its sides together, so that the water is spurted out of the back opening, and this repeated performance, gives the animal a peculiar force to move on rapidly in the water. I have seen some small *Onisci* (crustaceans) near them and in them. I also watched a red worm, about two lines long being sucked in by the mouth. It stopped underneath the smaller tube leading into the stomach, where it remained perfectly motionless as if dead, though shortly before in the water it had moved with great quickness; after a few peristaltic movements, the water seized it and took it out of the animal, and as soon as it was free again it was just so lively as it had been before.

The shape of the mollusc alters as soon as one takes it out of the water, because the hindermost thinner tube draws itself together as far as to the stomach, and the animal resembles a sack, the sides equally shrivel up. In spirits of wine it becomes much smaller and takes a milky colour. I had put a few of them to dry on Chinese blotting paper, and even two hours after, I could detect the contracting movement, though their bodies had contracted to half the usual size. There were a few ants on these animals later on. This mollusc forms quite a special class, and cannot possibly be a Medusa.

I stuffed the *Diodon ostingæ* in order to preserve it; the fins had twenty rays at the breast, ten double ones behind and ten rays in the tail fins. It was prickly all over, blue with black spots.

A mousecoloured swallow, with very long wings came to the ship towards evening, and I caught it alive after dark. In flying it resembled a hawk, as it remained a long time in the air without moving its wings. In colour, size and cry it resembled a bat.

19.—We had cast anchor for the night and in the morning we had a weak wind and passed many islands, which lie near Concas. The first of these were low and small, then there were some small hilly ones, but the larger islands were traversed by cigher mountains, forming a long ridge; they generally rose bradually in the north-west, were highest in the north-east, and game to an end quite abruptly; they were surrounded by a dark hlue atmosphere, and were overgrown with trees. The sea-water was not as clear here, but seemed greyish-black when one looked down.

The swallow, which was caught yesterday had a short bill, the upper part of which was a little longer and slightly curved at the end. The nostrils were projecting and had a round edge; the neck was short, the eyes were large, projecting and black; the eyelids were naked, only at the edge they had a single row of small short feathers. The wings were extraordinarily long, longer than the tail, and the feathers at their end were curved in a sword-shape, and were very narrow. The wing had eighteen long feathers. the latter ones being wider and finishing in a slant.

There were ten tail-feathers of almost equal length, the middle ones being only slightly shorter, the ends of these feathers are broad and rounded. The whole tail had scarcely the length of the body. The feet are short and black, the toes as long as the first joint of the foot. The whole body, as I said before, had everywhere the colour of a bat. I stuffed the bird to keep it. We were to-day a little over ten degrees N. Latitude.

20. As we were so near the land, we cast anchor again for the night, but we hoisted it ere daybreak. We had fine weather to-day and I saw a great quantity of the phosphorescent Scyllæ swimming in the sea, but could not catch a single one, because they were at three feet depth, some even at four to six feet. My Tritons and the Medusa I described near Malacca, (the one with the eight red stripes, each red stripe consisting of two rows of red spots ending in a sort of tube) were frequently passing our

ship. Some of these Medusas were longer than a finger, and at the wider end divided in two lobes; I have observed this often, but had not marked it down in my description; the thinner part finishes in a sort of wart, which projects a little. I saw a peculiar animal moving rapidly in the sea after the manner of a worm; it was about one span long and as thick as a quill. I caught many of them, but as soon as they touched the net, they broke into many small pieces, so that I had much difficulty in bringing some of them under the microscope, but succeeded in the end. It was an animal of the same kind of mollusc whch I called a new class the day before yesterday, but they hang together by their ends and in this attitude they have four corners obtuse at the ends, only one little piece sticking out at each end. Each separate piece is of the length of a coffee-berry, but is not quite as thick at their hindmost part. The ballshaped stomach is easily recognisable on account of its opaque colour; which in some is dark green, in others blue or yellow, and is as big as a mustard seed. They were specially conspicuous when swimming, becauns their movements were like those of a worm, and very differete from those of any other mollusc. As soon as I put them into water, their movements were very rapid, so that before I could examine them properly, I thought them to be *Volvox* because the body was as transparent as the clearest crystal. The principal difference between the *Volvox* and this animal is, that it has a conically projecting point at both ends; that the mouth as well as the opening at the back are placed under this projecting point, and the greatest difference is, that there is not such a free passage for the water in their body as in that of the former, because there are some valves in their mouths and the divided trumpet like tube is not as large at the beginning. I could distinctly see the valves at the two opposite sides. The long thin tube being on the side where the stomach is attached really comes from the stomach, and is somewhat thicker in the beginning, ending in a point nearer the mouth.

There was still another species or variety of these molluscs swimming past the ship: the trumpet-shaped tube was of a blue colour, and one could distinctly see the grooves or better the transverse furrows, which were very close together. The stomach was green and the opening at the back of a bright orange-red.

As I cannot describe everything as minutely as I ought to, I will note down whatever I see, in order to tempt others to closer investigation. I shall give special attention to the molluscs.*

I caught to-day some Medusa, of $\frac{3}{4}$ of an inch in diameter. Their disc resembled a convex button and was about $\frac{1}{4}$ of an inch thick, quite smooth and as transparent as a crystal. The outer edge projected a little and had many hairlike threads of a milk-white colour standing apart one from the other, they had not the length of the diameter of the body. Behind these there was a second ring-shaped slightly projecting membrane, having also fine threads which were however shorter, a little thicker, but very thin at their base; they were closely covered with tiny dots, giving these threads a clublike appearance, the disc itself between these threads was naked and quite flat.

21.—There were again many of the new kind of molluscs and also some of those with the blue gut. I further observed, that when freshly taken out of the sea, they had six projecting corners. At both ends they were obtuse, as if cut off; a little thicker in the middle and hardly longer than one inch and $\frac{1}{3}$ of an inch in diameter, at the ends only $\frac{1}{4}$ of an inch in diameter. If one seized it at one of these ends and shook it a little, the inner parts dropped out as if from a sheath; these parts had a thin gelatinous skin, while the outer parts were covered with a thick hard skin. There was only life in the inner parts, and when I threw them back into the water, they continued to live as before, but the blue gut lengthened to three times its usual size, loosened itself from the slimy skin with a jerky movement peculiar to these animals, and I suppose it forms the young animals, because after it had lengthened in this way it had distinctly visible little spots near the stomach, and the blue colour is changed into a green transparent one.

A very large snake passed the ship, and a very pretty small one as well; its belly was chestnut brown and the head and back pitch black; it was one and a half feet in length.

A chain of a foot and a half long, formed by the kind of animals I described yesterday, passed the ship in the afternoon.

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* In these days of big, rapidly travelling steamers, a naturalist has no such chance of observing the Jelly fish which Kœnig took such delight in, and probably many of these animals he here describes have not been met with since. (Ed.)

22.—Last night we had a very strong thunderstorm, and as we passed the islands on the Western side, and lay below the high Cambodian mountains, which are also situated on islands, the echo was tremendous. The lighting descended perpendicularly, sometimes in double flashes on the mountains. It was white and at times blue. Just opposite our ship and further north-west, there was another storm cloud which sent forth fewer flashes of lightning, which were rose-coloured.

I dried some specimens of the new kind of mollusc, which for now I will call *Clio*; which they were being dried in the sun their blue gut changed into a beautiful red. I also put some in spirits, also the small ones hanging together, which I will call *Clio concatenata* at present.

At midday many cat fish were caught, *Siluris Cattus.* I made the following description of one which was almost a foot and a half long: The head is flattened and the upper part of the mouth rather projecting and pointed towards the end, flat at the lower side; the lower part of the mouth is large and rounded. At the angles the upper part of the mouth has on both sides a beard, looking like a single thread, which is as long as the head is wide in this place. The lower jaw has four such threads in one row, the mouth is large and has many very short teeth. Above the upper lip there are two round big nostrils on each side, which are quite uncovered.

23—Early this morning, as the weather was fine, the ship was surrounded by many thousands of *Cliones concatenatæ*, some of them being one and a half feet long. To-day I caught again some of the big *Cliones* without sheath and found them full of little *Onisci* (Crustaceans), which animal I described as follows:

The animal is oblong, pointed at both ends, about three lines in length and hardly one in width. The head is covered by a skin, which projects straight out and is pointed towards the end having the shape of a shield; the edges are sharp and concave below. The mouth is slightly projecting below, and is surrounded by some bristles. The antennæ are placed below the mouth at the sides and look like hair; the feet are pressed to the body, they are round at the end and club-shaped, have one joint in the middle and two at the base, they are formed of a horny stiff substance, and are generally as long as the body. The eyes are placed at the side of the head, they are long, big, and green, The body is covered with ten stripes in the shape of a half circle. and from the ninth near the tail there is a projecting point. All are white with black spots, specially towards the edges. The tail is pointed, heart-shaped, generally flat, and has on each side three pairs of lancetshaped pointed lobes of unequal length, each of these pairs having a common base. The feet are like those of the whole family.

There was another kind which differed from them in so far, that the projecting point in front, is divided into two parts, and that the short pliable antennæ, are placed immediately underneath; the tail was more concave and had bigger lobes and they were more in number. The whole back is coffee brown. In size and everything else, they are like those I described before.

We saw early this morning the cliff which was wrongly marked in the chart, we passed it and at midday we were on the eleventh degree thirteen minutes of N. Lat. The wind was only weak and we had showers and storms at intervals.

24.—The blue gut of the *Clio retusa* had turned yellow today in spirits, and the *C. concatenata* had given the spirits a milky colour. When the anchors were hoisted this morning they brought up a sort of whitish grey clay, with red and yellow iron particles, it was very soft and fine to the touch, hard and did not effervesce in aqua fortis. There were many shells in this clay, specially little *Turris* and half putrid *Dentalia*. We passed today some very high mountains situated on some islands, they were of long extent and formed a continuous ridge with some smaller mountains; they were very much cleft and overgrown with trees down to the sea-shore. In the distance we saw a smaller island, only consisting of some high and small mountains, behind which a place important for commerce was said to be situated; it has a flourishing trade in Gutta percha, Cardamoms and even gold. This place really lies on the land and near it there is a mountain having a table-shaped summit, which must at least be as high as the Table Mountain.

25.—To-day we proceeded with fine weather and favourable wind as far as the little Sinus or the bay of Siam. We passed the cape marked in the charts as Cape Siant, which according to our captain is formed of mountainous islands, and in his opinion the situation marked on the chart is totally wrong, but as this was a point only clear to sailors I did not make any closer inquiry, as my calling does not demand any minute knowledge of such things. The mountains here were less overgrown. A flat rock, showing little above the surface of the water lay about half a German mile distant from the others, deeper in the sea. At night we again cast anchor.

26.—To-day we had very strong north-east wind, which was very unfavourable for us, as our course was just in that direction. We had on both sides high land; on our left we specially saw the Penno Mountains which the Siamese call, "the mountains with hundred peaks." Our captain told me that there are abundant gold mines in these mountains, which have however been deserted since the insurrection of the Burmans. The present king of Siam would not have them re-opened, for fear that his nation might again fall into luxury and effeminacy through riches. According to the captain's version the gold was very fine. The wind increased, and to-wards midday we were driven quite close to the western coast, not far from a place called Pepery,* and there near some very high mountains we were obliged to cast anchor again; a Chinese junk was forced by the weather to do the same. Towards evening the wind calmed down a little, and as we had only about ten fathoms of water, some of our people began to fish. Amongst other fish they caught an *Echineis Naucrates*,† but one could easily see that it was still young, as it was not quite two feet long. The whole body was of a black lead colour, with a bright white stripe on either side underneath, running along the whole length of the body. It sucked the ship so firmly that they tore it a little when they pulled it up. The shield of the head was four inches in length and five quarters of an inch in width; it had twenty-five furrows, which were edged with stiff hair and this part was quite black, and as the animal was damaged I only kept and dried this furrowy part.

I made the following description of two fishes, one of them I believe to be a *Labrus*, the other a perch. The upper lip is a little longer than the lower, broad, shiny, double. The teeth are numerous, sharp, small and of equal size. The nostrils are near the eyes, oblong, with a depression near them, which is smaller than the nostrils. The eyes are rather projecting, big, their iris is gold-coloured, their pupil black and large. The gill-covers are divided crossways, the first one is indented with small teeth, the second one ends in a soft skin, and the gill-cover has seven rays.

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* Pipri.

† A sucking-fish.

The pectoral-fins have fourteen rays, they are long and end in a narrow point. The ventral fins project backwards and consist of six broad, strong rays, which towards the end are divided into many parts. They are only half as long as the pectoral fins, much thicker, and the rays are yellow, while the thin skin is white and transparent.

(27.—We had to lay at anchor.)

The dorsal fins consist of twenty-five rays; the first of these are prickly, and those in the middle are longest; they are fourteen in number and are joined to the shorter prickly ones. They only get longer gradually and shorten just as gradually again, they are thinner and soft at the ends. The hindmost fin consists of rays, the first of them is prickly and quite short, the second one is also prickly and is the longest, both are strong and bony the third is less prickly, also long, but shorter than the others, the rest are soft and thin, and they all are of a yellow colour The tail is obtuse, a little retuse in the middle and consists of sixteen rays, which are broad and the divide into many parts towards the end. The lateral line is a little bent.

The back is dark silver-coloured and has four transverse, oblong black spots of unequal size, and some irregular black spots at the root of the dorsal fins; all the rest is silver-coloured, the scales are of medium size. The whole fish is not a span long.

The perch seemed to me to be only a variety of the one I found in the Strait of Malacca, but it was much longer. However the description of this one runs also as follows: The lower lip is longest, the upper one is double, the outer edge being flat, golden yellow and shiny. It has many teeth, which stand a little apart from each other; they are sharp and of equal size. The nostrils are in the middle between the lips and the eyes, and have swollen edges inside; they are round and of medium size. There is another pair of holes above them, close to the eyes, these are bigger, stand in a straight line, have there a straight projecting root, and afterwards they go into the head in a more slanting manner.

The gill-covers are divided crossways, the front part is irregular and sharply indented, the back part has first a long sharp bony point, and a little higher towards the head there is another point, much shorter and projecting a little. The rest is covered with a smooth soft skin, projects only slightly, and below the gill-cover there are six rays, the last of which are hardly discernible.

The pectoral fins are in front of the ventral fins and have at their root a bony plate; the edge slants upwards, is furrowed and indented, and of a silvery colour; it is but small. The fin rays are oblong, thin and lemon-yellow. The ventral fins have six strong rays. The first of them is closely connected with the second, but is a little shorter than the latter, it is strong, bony and ends is a point. The rest of these rays are much divided at their ends and are soft and yellow.

The dorsal fins reach almost over the whole back; they have twenty-two rays, the first of these being prickly at the end, they get gradually longer and in the same manner shorter again in a sort of curve. In the middle of them there is a large black spot, and a smaller one just before the soft fins. These softer fins also describe the same curve as the others.

The hindmost fins consist of nine rays, the three first ones are prickly. The tail is obtuse, and consists of eighteen broad joined rays, it is of medium length and has three broad stripes running down its length, edged by a pale yellow margin.

The whole body is of a white silver colour, with three dark stripes running lengthwise. The lateral line is slightly curved near the stomach, but is straight at the tail; the scales are very small and shiny.

28.—The wind continued to be unfavourable for us, and we tried to reach the other side of the coast in which attempt we were successful: the western coast had higher mountains, though the shore itself was flat, and we could distinctly see the shores on both sides. As we came near the Eastern coast, we saw much sea-weed drifting past our ship, which I could not examine any closer. Before on the western side there had been many shoots sprung up from the seed of the *Bontia* drifting past our ship. The *Bontia* however seemed to me to be slightly different from the ones we had seen on the coast of Coromandel, Ceylon and that of Malacca.

27.—We lay at anchor at the same place as yesterday, and could not do anything on account of the strong wind.

29.—To-day we passed some time in crossing from one side of the inner bay to the other, and the nature of the different things, which drifted along the coast, showed us near which coast we were at the time, and what kind of soil the land consisted of. At the western side floated much seed of the *Rhizophora*, my new palm, and also still of another kind of palm which I do not yet know specially often completely germinated seed of the *Bontia germinans*, while near the eastern side there was nothing else to be seen but only sea weeds. I had at last the good luck to-day to catch a sea-snake. It did not seem any other kind than the *Anguis Platura*, but it had the peculiarity that the scales were six to seven cornered and had a raised point in the middle, which near the belly were so big as to form real prickles. Another of the same kind of snakes floated past the ship; it was asleep and I could again observe that it lay on its back, with strongly puffed up stomach; that the head did not stand out above the surface of the water more than the stomach, and that it was so closely twined together that it occupied only a small space.

To-day they caught again an *Echineis Naucrates* with the angle. It was little more than two feet long, its colour was ashy-grey and the white line near the stomach was very inconspicuous It had this peculiarity, that the projecting point of the mouth was flat underneath and fine sharp points, like a fine shagreen. The pectoral fins had twenty rays; the ventral fins stood closely together at the base, and had five rays. The dorsal fins had thirty-six rays; the hindmost fins had thirty-five rays. The tail was less forked than that of the others and had twenty-five rays The gill-cover had six rays. The shield over the head, which the animal uses for the purpose of sucking, had only twenty-three scales which were indented at the edges. In the middle of these scales was a bone running lengthwise, and they were fastened to this bone at their inner side. This bone serves to give them more strength.

30.—Last night and to-day, though the wind was contrary it was so weak, that we advanced much. We passed one arm of the stream, which we were to sail up in order to come to the capital of Siam, called Bangkok, and we deemed ourselves at two miles distance from this town. The coast was very low here; though we were hardly three quarters of a mile from it, we could only distinguish very little of the trees, which seemed also to grow here on the western shore as in many places of the Malay coast.

The sea-water was very turbid here, and a rust-coloured scum was frequently floating on the water. The ground seemed to be formed of some greenish mud, which when dry changed into a fine clay. At midday the anchors were cast for a short time, and two sea-snakes, *Anguis platura.* were caught with the angle. As they were only of the common kind, I put them back into the water. I only cut off the head of one of them, the rest of the body went down to the bottom of the sea, like the other snake, which still had its head

NOVEMBER 1.—The unfavourable north east wind continued, and was very strong. We had neared the land up to two German miles, but the mouth of the big river which we wanted to enter lay in the very direction from where the wind blew. A *Muscicapa Paradisi*,* with brown feathers and black head, came several times to the ship, but as it was one of the commonest kind I did not mind much that soon after it returned to the land.

3.—We passed the day yesterday lying at anchor; a boat was sent to the shore, which brought us the information that we were lying in a small arm of the river on which the capital of Siam, called Bangkok, is situated, and that the village not far from us was Tadschin. From this village we got some refreshments and two pilots. According to what they said, we had to make two and a half miles more to the north east, in order to come to the right mouth of the river. Before daybreak, the anchors were hoisted, and with slightly more favourable wind we sailed along the coast. The shores seemed to be very low, and were closely overgrown with trees, which like those on the Malay coast were growing in the water. A beautiful kind of Night Moth *(Phalœna Noctua)* came flying from the land. I described it as very similar to the kinds which live on different wild fig trees on the coast of Coromandel, but they are different in so far that their wings have strong veins, which are of a yellowish-grey colour, and have black spots, and while the body of the other kind is generally ochre yellow, this one was beautifully carmine-red and white underneath.

4.—We came to-day to the so-called bar or mouth of the river, and the water was so shallow that at low-tide our ship was fast in the muddy ground, and as the wiud as well as the current were against us, the ship was pulled up by means of a small anchor, and we proceeded very slowly The king of Siam sent a big sloop with one of his ministers and a Portuguese Mandarin in his service, that they might bring his compliments to the captain and take him to his residence, from which we were still at a distance of four German miles. I was particularly struck with the slavish respect, which the subalterns observe towards the higher officers, for never a subaltern would speak to the higher officer, without folding his hands and lifting them up to his mouth or his forehead, and often they crept on their knees, to do the same thing which we are accustomed to perform standing. Towards evening there came a great number of butterflies, hornets, wasps, and dragonflies and some kinds of bugs flying to our ship, the best among those which I caught, was the biggest *Papilio* I had ever seen. During these days we advanced but little and the longed-for land remained at such a distance that I could not go on shore. Nevertheless we were greeted by the mosquitos, but they were not very numerous.

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* **Paradise Flycatcher**

8.—We advanced a little quicker over the muddy ground during these two days, though the current was against us and the water fell so low, that it was only a few feet deep at low tide but this could not be a great hindrance to us any more because the neighbourhood of the land helped us considerably in tugging up our ship. We had at last the good fortune to enter the Bangkok river, and in the afternoon I went on shore in a small boat. The coast is very flat, and as it was just low-tide, I could walk along the shore, which is overgrown with dense forests. The first plant I came across was *Panicum colonum.* It grew amongst the *Rhizophora candelaria,* which was here only a small shrub, lying in the water. In a smaller arm of the river, which we entered on account of the greater facility it offered for landing, I often saw *Cerbera Mangas,** and in the muddy soil there was almost no other plant to be seen than *Verbesina biflora.* There was a *Dolichos* climbing upon the trees; it had greenish blossoms in an umbel and the pods were more than half a foot in length; they were also broad and had at both ends a double keel. These pods, as long as they were still green, were covered with shiny stiff hair closely pressed against the pod; this hair stuck to one's finger and burnt much stronger than *Dolichos mucuna urens* and *prusens,* the colour was of a beautiful orange-red.†

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* *C. Odollam L*

† Evidently *Mucuna.*

Of the other trees some were unknown to me, others were *Rhizophora.* A squirrel was shot, whereupon the whole wood was filled with the screaming of the monkeys. The back, sides, and tail of this *Sciurus* were dark grey, and towards the surface of the hair yellow; the mouth and the round ears were black, the stomach rust-coloured brown; it was twice as large as the *Sciurus Palmarum.* I searched particularly for grasses, but there were no other species to be found in perfection than *Agrostis cruciata Eleusina indica* at half a man's height and *Scirpus trigynus;* the other kinds had only leaves, which were sharp to the touch and very tall. *Rhizophora candelaria* had three filaments, which were connate in a puffed-up membranaceous tube,and also as many anthers.

The crocodiles swam in front of our boat; they often made a dreadful noise, but the people said we had nothing to fear from them here, they are only dangerous further inland.

9.—Early this morning I left the ship in a boat; the ship had come up to the mouth of the river. Unfavourable wind and the current forced the people who were rowing the boat to try and reach the bank on our left, which we were passing quite closely. The bank was very low, and as we had high-tide it stood under water, but in spite of that it was closely overgrown with different kinds of trees and especially at first I often came across the kind of palm tree that I described at the Malay coast, which seemed to be a very useful tree for the natives of this country, because all the houses are covered with it. I did not see any blossoms or fruits upon them, but if one has seen them once, they are easily recognised. A great number of trees grew in the river and bent their branches down to the water; they were of a new kind. They have a long irregular crown with pendent branches and the leaves are very much like those of the *Jambolifera,*[*] but the blossoms and fruits are very different. The tree belongs to the *Polyandria* or thirteenth class of Linnæus. The stamens project above the young fruit, on a coloured projecting edge, and grow on the corolla; they are very numerous, about two inches in length, quite white; the style is longer still and the stigma is oval, small, furrowed, pierced, sticky, perfect, and twice as broad as the compressed pistil is thick. The corolla is peculiarly slender as long as the calyx and of a beautiful red colour. The pistil remains on the fruit with the expanded six to eight lobes of the calyx, while all other parts of the blossom do not outlast a day, and drop off. The flower opens at nine o'clock, and if one only touched the filaments at midday they would fall off. The people told me that the fruit is eaten by the natives, but that it had very little flesh and a sour taste, but the trees were filled with monkeys searching for these fruits. The complete description is among the descriptions of other Siamese plants, under the name of Lampu.*

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[*] *Eugenia jambos.*

We only saw an old man and a woman in a small boat, who picked the fruits which hung near the water, and which therefore the monkeys could not reach. One of these fruits, which was ripe, fell into the water close to my boat, I wanted to get it but it sank straight down to the bottom, and as the water here was several men's depth, I could not fish it out again. Further on I found a great quantity of a kind of *Acanthus*, very much like *ilicifolius*. The stalks, leaves and blossoms are only in so far different that one could not mix up the two kinds. I shall describe it. The blossoms are much smaller and white.†

At a place which was not so much overgrown with trees, and which seemed to lie somewhat higher, though it was also covered with water, I went on shore alone. The leaves of the grasses were mostly growing as high as I was tall, but there were no fruits. *Scirpus trigynus* and *Agrostis cruciata* were rarely to be seen: they grew about two and half feet high. A *Verbesina* with lancet shaped leaves, was the only new thing I came across. Some sort of paths had been made between the grasses, which I intended to follow, but they led to deep holes, which circumstance made me more prudent. At last I came to a deep ditch, where the track seemed to be beaten most, but I was not able to discover any trace of a path on the opposite side; this made me suspect that those paths might have been made by big crocodiles. I had already advanced about one hundred feet, but I now hastily tried to regain the boat. After this I found some new kinds of grass, which I intend to examine more closely. A violent shower of rain made me long very much for our arrival at Bankok, and we reached the town towards evening, after having been obliged to fight against the wind and the current for three German miles.

10.—Early this morning I surveyed the neighbourhood, but it was impossible to go out. The house where I stayed was built on poles, which stood about a man's height above the ground and were driven into deep mud, which when the tide was high was entirely covered with water. The large stream, which passed quite close near the house, was here hardly half a cannon-shot wide, and on both its shores there were houses built on poles like ours, or floating houses. Almost all these houses were built of bamboo, fastened together with the leaves of the afore-described new palm tree, and their roofs were also covered with the same leaves; only our house, which had been erected quite recently, was built of wood in quite an artistic manner, and covered with slates. There was another better built house near ours, which was destined for the king of Cambodia, who had received an order to come hither and was expected to arrive soon. However, a prince of Cambodia, a near relative of the king, lived in a house which was only built of bamboo and palm-leaves, only it was a little larger than the ordinary houses, about twelve steps long and eight steps wide. His courtiers and servants without exception lived in houses which were not eight steps long and three steps wide; many were even smaller. All these huts stood at our right hand in the mud; they were built irregularly, without any lanes or passages between them. There were only quite narrow footpaths, which sometimes led underneath other houses as access to their own, and when the water was high, they could use small boats, by means of which they also fetched their drinking water from the large river to their houses; but at low tide they waded over knee-deep in the mud, only here and there some thick beams had been laid near to the houses. At our left was the house of the king of Cambodia, who is a vassal of the king of Siam. The house is fenced in by a fence almost two men's height, about three hundred feet in length and two hundred feet in width. The building itself stood about fifty steps far both from the river and from the fence, and closer to the fence at the side turned towards us. A great number of martins sought their food in the mud near the houses. There were two different kinds of them. The smallest was *Gracula cristatella.* Its head is somewhat compressed and at certain movements all the feathers of the forehead and neck stood straight up, which really looked like a tuft; the bill is conical at the base, the upperpart has a round edge, both parts are equally long, pointed yellow. The eyes are surrounded by a bare, smooth, indented ring, which is quite black. The nostrils are half-hidden by the feathers, they are pretty large, The tongue is divided at the end. The wings have fifteen flight-feathers. The tail is oval and consists of fifteen feathers, which are white at the ends; the whole bird being black and only having oblong white spots across the wings. They are half the size of those which one sees so often on the coast of Coromandel, and have a bad smell when one takes them in one's hands. The second kind seemed to me to be the *Gracula calva*, or a new species.

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* A *Barringtonia*.

† *Acanthus ebracteatus*, Vahl.

11-14.—During these days we had almost continual rain. I took much trouble to hire or buy a boat, but I was not able to obtain anything from these people in a hurry, because they are both lazy and suspicious, and I had to content myself to remain in the house in as calm a mood as circumstances would permit.

15.—I obtained a boat for hire, with which I went to the Roman Church, which has been established here. There were one bishop and two preachers of French nationality, all directly ordained from Rome, but being paid by France. The Church was like a large barn, built of wooden beams and bamboo, and covered with leaves of the ordinary palm-tree. The altar was only a kind of table, behind which there were some steps, rising pyramidally, some of them being painted with red foliage, and upon one of them stood a small cross, but there were almost no pictures and images besides, as is generally the use in this religion. Before mass one of the preachers preached in Siamese. The Church itself was dry, but round about there was a swamp, which was overgrown with grass, growing higher than a man, and as the water was low I waded through it. I first found a wild shrub, with very far spreading panicles, the stalks standing apart from each other; it was higher than a man. The natives call it in their language the Bird-shrub.

There was a second species growing among them; their panicles were compact, and it had no corolla, but the ordinary scales as nectaries; and a very beautiful paspalum the spikes of which were alternate and patent, and the spikelets were of a pink or purple colour. A high growing kind of grass, which resembles the Tripsaca and grew in a deep swamp, I found moreover; and some of the *Schoenus Surinamensis* of Mr. Rottboell I did not see any other kind of grasses here besides *Cynosurus*

Indicus, *C. œgyptiacus*, *Panicum colonum*, *P. grossarium*, *Agrostis indica*, *Saccharum diandrum*, *S. spontaneum*, *Convolvulus Turpethum*, *C. paniculatus multiflorus.*

I also saw a *Hedysarum* (*Desmodium.* sp.) the blossoms of which resembled very much those of the *Astragalus Sainfoin* but it had three leaves which were of a silver colour, on the lower side. Many kinds of grasses had only sent out their first shoots, so that I could not recognise them. *Verbesina acmella** was cultivated here.

16-17.—I tried again, but uselessly, to hire a boat.

18.—At last I obtained a boat, for which I was to pay two piasters a month for hire; and for four rowers I had to give one manjang a day, which is the 7th part of a piaster, which made the cost amount altogether to one tikel a day. My first trip was about one English mile north east of the town, to a Siamese Pagoda, situated near the mouth of a smaller arm of the river. The banks were somewhat higher here, but all was wild and left to nature. The building of this Pagoda is only an ordinary house with a small double door and a couple of small windows at the side. It was of medium height, and was built in such manner that the ridge of the roof was slightly raised at the extremities. I could only peep through one of the windows, and saw many gilded and crowned idols of different size on a sort of elevation, In front of the Pagoda, about fifteen steps from it, stood two pyramidal columns on a broad eight-cornered pedestal. In different houses standing apart there live some Talapoins, and near the Pagoda was a big barn, which had a high bench with a sort of banister round it, in the middle; and before it there was a big square enclosure, round which there hung great many carvings, paper flowers, fringes and things of the same ornamental nature; round about there were brick benches. The Talapoins were said to preach their sermons in this building. I made ample botanic discoveries. I found a plant whose corolla was a tube of a bright red colour; it grew upon a pistil, which was compressed and many cornered; as far as I can judge it was a Thalia. A great quantity of a kind of Carex grew here which I have already described, and among them frequently *Notira interrupta.* I found a kind of *Rhus* and a specimen of *Dioscorea* in fruit, without blossoms. The former I recognised, having

* *Spilanthes Acmella Dec.*

seen it already before, and the latter from the axillary bulbils which were as round as a ball and had many knots.

Verbesina acmella grew here very frequently. Near the columns grew *Bryum murale*, and near it a special kind of grass which I could not classify among any of the different classes of Linneus. (Then follows a description, rather confused, of the plant, which was apparently Job's tears, *Coix Lachryma Jobi.*)

19—20. I made a description of the plants collected, and tried to find as many of their Siamese names as I could. I also got a kind of fern from the people, which when it is still quite young is eaten as a kind of asparagus.

An unusually heavy and long-lasting rain prevented me from any excursion, and moreover it hindered me in the drying of the collected plants. We had rain during the whole afternoon.

21. One of my crew, after an uncomfortably passed night, was attacked by a nervous illness, called Janun, which is very common in this climate; he had bathed in the early hours. After taking some camphor powders and a mixture of salts, the strain of the nerves subsided, the yawning fits, the nervous dread, and the nausea had passed, a quiet sleep followed and his pulse was good and regular. Afterwards I gave him a mild detergent, which consisted of a solution of tartar, (emetic) but part of it he brought up again. Meanwhile there arrived some native doctors, which were said to be sent hither by the king. At nine o'clock in the morning there came four more, bringing some sacred water from one of their idols. Then they offered up a sacrifice for him to their idols, and then washed his face and body with this water. Nevertheless there was no improvement. The sudden change of temperature which he underwent when they took him out of a very narrow bed and of several yards of flannel, wherein he had been lying for two days, much against my wish, made the perspiration go back and caused a new illness. The native doctors gave him first a mixture of tamarind and the tube-like kasia, which he brought up again, then they give him some of the heart of the Euphorbia, which caused him much pain in his bowels. The danger increased and the learned doctors had to think of some other way to procure him relief. About 9 o'clock some stalks of the Papaya tree with their leaves were brought in; they were about 2½ feet long and about one inch thick. The leaves were taken off and the some-

what thinner end the doctor inserted in the posterior of the invalid, and then he blew through the other end of the stalk. At this operation the invalid began to scream tremendously, the pains augmented, and he lay moaning for more than a quarter of an hour. At last his bowels acted and half an hour after again accompanied with the same groans. I left my obstinate invalid at the request of the priests, recommending him to God's mercy.

22.—The invalid sent for me twice during the night, complaining that he lost much blood by the rectum both in piles and flowing away. The native doctors gave him some astringent remedies, and so I left him in their charge.

After service I went to the temple of an idol, which lay in a wood. I could go there in my boat by rowing up a small stream. I found very many new and rare things botanical *Canna indica* grew here in the swamps, almost the height of two men, it had yellow blossoms. I found one plant here resembling a Rhus; it was in blossom, but it cannot be the afore-mentioned plant, because its nectary resembled that of our lily of the valley, and the peculiarity was that the stamens were only inserted at the outer side of the nectary. The anthers were situated in the opening of their nectary and grew together in a ring; they were five in number; this ring was smaller at the inside and had a reddish colour, and only one style. The fruit is a pear, and is eaten by the people.

Hedysarum triflorum, and *Hedysarum heterocarpum* grew abundantly in the wood, and amongst them climbed *Piper Siriboa.* A new kind of *Phyllanthus* grew here; it was a shrub and had flat berries of an orange-colour, it stood among the kind which has the white berries and the species of this family, which Mr. Burman wrongly calls *Rhamnus vitis-idea.* The most peculiar thing I saw here was a kind of grass, the leaves of which were like the first leaves of the Coco tree, with the same ribbed folds; it was a kind of Panicum and grew very high and abundantly among the *Apluda.* *Orieda pinnati-folia* had already dropped its leaves, which seldom last much after sunrise when the dew has half dried away. I saw a second species with linear, lancet-shaped leaves. This was only a shrub of about one and a half men's height. There was a species of *Dolichos* which had pods like those of *D. pruriens*, but its blossoms were very small and blue in colour, while the blossoms of the other are big and black-red, The pods themselves were cylindrical and rounded off at the ends, while the pods of the other are compressed and the ends are raised. Both kinds however have prickly hair.

The plant which I had thought to be a Thalia, I found afterwards to be a Maranta, but perfect blossoms were very rare, most of them were putrid from the long duration of the rain, or insects had eaten them. Most of these plants I preserved to describe them next day.

In the afternoon I went into a Chinese temple of idols, which was situated near our house. The Bontzes, or as the Siamese call them the Ichiton-Chine or priests, received me kindly. The temple consisted of two buildings which were separated lengthways, and again joined by means of a rather low roof. Inside they looked like a single big room, having at each side a row of pillars constructed of thick beams. Two big lanterns having the look of cages hung before the entrance: they were long and round, about two feet in diameter and three feet long; they were made of very fine rotan plaited together, and covered with some transparent linen, firmly drawn across, upon which large red Chinese letters were traced on one side with ordinary red cinnabar. Inside the temple there were some small divisions near the entrance in which were kept utensils for washing and cleaning purposes. In the middle of this building stood a small square table and some chairs made of bamboo, at which they say their prayers. Before one came to the altar one saw some orange coloured papers hanging from a beam, which were covered with Chinese letters, forming the names of all those who had given presents to this temple. Between the wooden pillars there hung many kinds of painted Chinese lanterns, and at the end there were three altars. On the one at the right hand was an old gilded idol, representing a woman, and many other idols, made of black clay stood also upon it. Some of these idols represented lions, others were of monstrous aspect, these were all idols from Cambodia. At the left was a beautiful and newly gilt idol, also bearing the features of a woman, before it stood some Mandarins and at the sides were some idols about two feet high, having very dreadful faces. They were haggard and looked ready to devour everything.

On the middle altar was the principal god, a gilded idol in a sitting posture and rather more than life size. Before it stood many idols in various positions, among them some with their hands crossed and turned up. A table like an altar stood a little more in front, on it were also some idols and some deep china vessels, which were filled with sand, into which some lighted staffs had been stuck. These staffs are really placed there for fumigating purposes. Before the principal idols there hung a red silk curtain half down over the altar, at both sides hung four narrow wooden boards, the two nearest the middle being black were covered with red characters, and the longest of them were five yards long and ten inches wide. The boards nearer the sides were orange red, and covered with black characters; they were shorter. These boards were said to contain their doctrines.

23.—I described some of the plants I found. The treatment had a very bad effect on the sick man, and therefore another sacrifice was offered to the gods by the Jungalish priests as they did yesterday.

24.—To-day the priests came again and went through their ceremonies. I went to a pagoda and found the *Saraca* blooming very beautifully and having an unripe pod; I also found the burning Glycine with large, grape-like dark red blossoms, the calyx of which was overgrown with burning hair and the stigma was prickly. One of these flower bunches was more than a foot long. I saw the *Phaseolus urens* with beautiful blossoms.

25-26.—I had very much to do with the sick man during these days; he had been brought to the gates of death by means of the injection. The whole of his right groine was very much inflamed and swollen, without showing any sign of redness externally. I tried to reduce this inflammation by means of strong fomentations of a decoction of the Indian Sida, with a solution of lead in vinegar. Internally I used some camphorated spirits and gave him at the same time two clysters, upon which his fits diminished. The rest of the time I spent in looking my collection and in making my *Chloris Siamensis* as perfect as possible.

27.—I went higher up into the country to another temple, also situated on a small branch of a stream. The burning Glycine grew here everywhere frequently, but it had not yet any white pods. I found a new big *Acrostichum* in fruit, it grew climbing upon the trees and had big pinnate lancet-shaped leaves. I frequently found here a peculiar kind of *Phaseolus* with three rhombic leaves, and *Panicum dimidiatum* grew here to half a man's height. This moreover is the grass most frequently growing here in all damp woods. *Mimosa tamarindifolia* climbed upon some other high trees, specially upon the *Pterocarpi*, which however had no blossoms yet. There were some durians mangostans, rangostans, and jacques, growing in the narrow strips of wood, flanked by swampy ditches. There was a kind of Cassia here which had no blossoms, but only some unripe pods. *Hedysarum pulchellum* was here a common shrub and grew amongst the *Triumfetta*, and *Urena*. *Calamus* was here thick and very high, but it must be different species, because their leaves have big prickles and large nerves.

I met a boat the people of which offered the flesh of a big crocodile for sale; the meat looked very red and had a disgusting smell. The people told me that the tail was best and had no smell at all. The king of Siam pays for every crocodile a sum of—Tikals, in order to extirpate these animals. Therefore the crocodiles are afraid of any boat here, but higher up in the country they attack people and eat them.

Since the 19th of this month, with the appearance of the new moon, all the ramparts on the both sides are illuminated with lanterns, those formerly built by the French and now inhabited by the Chinese as well as those built by the Portuguese, behind which the king himself resides in a small fortress. The town in which the Siamese live, which is surrounded by a wall and rampart, and all the houses, were illuminated in the same manner.

The reason for this illumination lies in a superstition of these peoples who believe in the fable that Ordamans, or the subterranean giants sleep almost all the year round, except in this one month, when they awake and rise in order to kill all the inhabitants of Siam, but when they find them to be on their guard and see their lanterns lighted, these giants cannot do them any harm.

29.—Our first rower began to recover; the inflammation and swelling had subsided, but he was not yet able to get up on account of pain in the groin.

I went again deeper inland, rowing with my boat up a small river and found various new plants, specially two kinds of palms, which were in bloom and had fruits. I also saw a monandrian (wild ginger) near a pagoda, and two crocodiles swam in front of the boat but dived to the bottom as soon as I came near them.

In the evening a fire broke out on a Chinese ship, which was still covered with the leaves of a palm to protect it during the rainy season. The fire grew very big all of a sudden, and the people working on the ship lost their heads, The Siamese had all come to look on, and thousands of small boats covered the water. The king however, who came also with some of his officers, caused the fire to be extinguished very soon, which is so much easier done because these ships are not tarred, but all crevices are filled with oil and chalk which are not so inflammable. I got to-day a black snake, which was over one foot long, and had some tentacles at both sides of the upper lip.

DECEMBER 1-2.—During these days I tried to cure our first rower as much as possible, and prepared meanwhile for a journey to Inthia, the former capital of Siam, which lies three days journey up the river from Bangkok.

3.—After much trouble I succeeded at last in seeing our first rower recovered. In the morning I had obtained my pass for Inthia, so that in the afternoon between 4 and 5 o'clock, as the low tide began, I could set out on my journey. At first the country which we passed was known to me, but after sunset there was a place on our left where it was possible to go on shore. It was almost too dark to distinguish anything, but I found a strange plant in a swamp, which was a Cassia, which is very celebrated for curing the ring-worm.* The place was called Bang la Mudsida. We went on and took shelter for the night in a place called Bangmanan, but on account of the numerous mosquitos we could not sleep. These insects had tormented me very much, and my face and hands were swollen.

4.—At three o'clock we left this place and at sunrise we went again ashore. Here I found a new species of Ginger, a *Vitis* with thin heart-shaped leaves and a narrow raceme, and a Boletus, was extraordinarily large.

The place was called Bang linang: in the afternoon I went again ashore for a little time at a place called Tay Sam kok. Here I found specially *Pentapetes coccinea*, *Gomphrena*, sp. nov. Vella kola, etc.; they were in bloom. In the evening we took rest in a little village called Tay Wock-Bie.

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* *Cassia alata*, L.

5.—We left very early, because we had again very much to suffer from the tiresome mosquitos, which are very abundant in these swampy parts, and we went ashore where the land was a little higher in a bamboo-wood, near a village called by the Portuguese a "Camp," (ko-Ban komun pia). Here I found *Hedysarum lagopodioides*, *Hedysarum lineatum*, *Alhagi umbellata*, *Hedysarum umbellalum*, *Waltheria*. Many trees had still their old leaves. I also saw a wood-pecker. At noon we went again ashore, into a flat field, near Ban nea Bansang, here the banks, which had been much overgrown before, were more open, and we had a free view for a considerable distance. Shortly before this we had entered a smaller arm of the stream called Klong Banghay. Here I found *Gmelina* with orbicular leaves, called by the Portuguese Reys de Madre de Deus. There were some wild ducks here.

We camped for the night near the village Telet Kriep. At first we had a perfect calm, which made us anticipate a disagreeable night, but we were less tormented by the mosquitos, because later on some wind arose.

6.—We left this place early, but the rapid current prevented us from advancing as quickly as was our wish, therefore I went ashore near a temple of idols, which had the same name as the above-mentioned place. I found here for the first time the common chickens wild, on an empty rice field; also a new *Cordia*, a *Cypripedium* and the above-mentioned *Gomphrena*. At midday I saw a very large temple which had been formerly very celebrated, Watt Pro-Lott. It consisted of three separate buildings, the one in the middle being the largest. It contained three big idols, all three in a sitting posture, and being three times the size of life. All three were black, with big half-opened eyes. They all had on their heads a quantity of little knots, which one could either take to represent negro hair, or a cap of jewels. All had their posteriors knocked off. I found *Ipomœa hepaticifolia* in magnificent blossom, also a new species of *Sida*, which mostly grew to a man's height; it was divided into many thin branches standing apart the leaves were heart-shaped at their base, but were long at the other end. The blossoms were only small and yellow; their pericarp was quite obtuse at the top and divided into many parts. There was a tree here, having pericarps like those of the *Combretum*, and oblong rigid leaves, striped by the veins which traversed them. They were mostly gnawed off by worms, but I did neither find truly ripe seed nor any blossom. I wanted to penetrate deeper inland, but a very high kind of grass, intertwined with convolvulus, made it impossible to advance any more.

In the afternoon I went to a little island, inhabited by a Chinese family, called Cohrien. At the borders rice had been planted, and in the middle *Convolvolus Batatas* was being cultivated; the soil consisted of a black mud mixed with swampy clay.

At five o'clock I went again ashore near the former Roman Catholic Church, which stands before the town at the left, and has been totally destroyed by the Burmese; only a few walls are still standing. It was called St. Paul. I collected *Mimosa bigemina* and *Ipomœa longiflora.*

In the evening I went again ashore near the temple Wath Tshan-Panon Isögu, situated on the smaller southern arm of the stream on the right hand side, and on the other side is the old town. I could only make a hasty investigation, because it was already late, but I found that here too, as in the other temple, the idols had been spoiled.

7.—Early this morning I went out on a tour of discovery. Behind the big temple of idols is another temples, which is separated from the former by a swamp, measuring 200 feet in width; this is the biggest in Siam. My botanical discoveries consisted of some splendid kinds of grasses, which had not withered yet. *Ipomœa grandiflora*; the whole blossom is about span long, and the outer edge has a diameter of the hand. The ruined temple, which was built upon a little hill, was surrounded by trees and shrubs. Among these shrubs I found *Rhamnus lineatus*, *Justicia Adhatoda*, *Plumbago Zeylonica*, *Barleria Prionotis;* these grew among the big shooting *Oviedа pinnatifolia*, which I found here for the first time with fruits. These fruits consist of smooth pods, as wide as a finger, three lines thick and two feet long. There were only few big old trees of this kind here, all the rest were younger plants. There were *Mimosa bigemina*, a *Mimosa* called Oiel Haut by the Dutch, and some others. The most remarkable climbing plant was *Ipomœa bona-nox*; I got much of its ripe seed. *Ipomœa coccinea* and *hepaticifolia* looked magnificent this fine morning. I found a small erect but very sickly shrub with only few branches, which had the character of the *Ovieda pinnatifolia*, in a grassy place, together with a peculiar *Apocynum* and an *Erigeron*, which also seemed new to me.

After I had described my new plants and put them away, I paid my visit to the chief Talapoin of this big temple. I found that he inhabited a brick house, which was not divided into rooms, and had no windows. His bed was on the ground, about one foot above the floor. His clothes, the provision of matting and his books were hanging on poles, or lay about rolled up in bundles. He showed me one of his books which was folded together in the fashion of the Siamese ; it was more than two feet long and scarcely one foot wide and about as thick. The two top pages and the edges were gilt; it was divided into several parts, and at the begining and end of each part illuminated figures were painted, executed in very fine colours.

I wanted very much to learn something about his religion from him. He would however not tell me anything referring to it, he would not even pronounce the name of the great god, neither that of the god to whom the pagoda was consecrated. At last, after he had spoken to me of his acquaintance with a Dutch captain, I asked him to take me into the big temple, so that I might see the great and celebrated idol of the Siamese. He consented to do so, and he led me through a small back door at the western side. The temple inside consists of one room, but on both sides there are four very thick stone pillars, which could not have been spanned by four men. They were painted with a brownish-red colour with big darker spots. At the side there were idols in life size in a sitting posture, at each side five in number. Between them were flat painted columns, and twice there were four other idols close together, so altogether there were eighteen idols. Upon those flat columns were some nations represented, always a man and a woman in their national dress. There were represented a Dutchman and his wife, a Cambodian and his wife, an inhabitant of Lao and his wife, a Chinese, a Cochin Chinese, a Siamese, all with their respective wives, etc. The idols at the entrance were painted with gold, those at the left were painted black. Above the idols there were some painted pictures representing scenes from their lives, but I did not see anything indecent in them, which is commonly the case with the Tamils. Above these pictures the wall was chiselled and cut into niches, which were very narrow and about one span long; they were all filled with small idols.

The real great idol was represented sitting after the manner of the Oriental people. He sat upon a wall, which at the side was edged with leaves, standing erect and painted brownish-red; they were not quite as big as a man. The hands of the idol were lying on his knees, the fingers spread out; his head reached up to the ridge of the highest roof. They said that this idol was twenty fathoms high, reckoned from the ground, but as it seems to me it was not much beyond twelve fathoms high. The space between the eight big pillars was filled out by this idol and the two minor idols, which were placed close to his knees, with their hands laid together. At the side of these were eight idols on each side, the first of them being about life-size, and they decreased in size by degrees. All these had their hands uplifted as high as their face, the inside of the hands turned towards the spectator. There stood a table before the big idol, and upon it idols of many kinds, all gilded; some baskets of flowers stood amongst them. The building measured from outside is forty steps long and forty-two wide. The roof is very high and has three divisions, the second division has furrows as if it were covered with gutter-tiles, only the top part is quite smooth, and has an edge of blue and white porcelain pieces with rounded edges.

The windows are only one fathom high, and only one span wide There were nineteen of them on each side and ten at the ends, five on each side of the door. The large door is ornamented with gilt carvings, at its side there were all sorts of china vessels standing in the wall; all these various vessels were stuck to the wall by means of chalk. Before the door stood on columns three figures, two feet in length, half a foot in width and half a hand thick, gilt on the outside and painted red inside. Before the door was a small building, the gable of which was ornamented with gilt carvings, convex little mirrors and glass painted green on one side.

There were two smaller temples, which however were only very small if compared to the large temple; they were being repaired. One of the big idols had his posterior knocked off and another one facing him had been deprived of his stomach, and his head had been cut off. There were many columns in pyramid shape before this temple; they had different sizes, specially those at the sides. Their pedestal is generally square, cut at the sides, the top part which forms the point is generally round, with ring-shaped deep furrows reaching up to the furthest top, which ends in a point. Many of these are gilt up to their middle, after that there are two rings painted red, and then again two gilt ones; the rest was whitened with chalk.

Towards evening I left this house of rest, and I went along the stream which borders the town in the east; it took us more than two hours to arrive at the place where the stream divides, and we had almost made a half circle in our circuit, always keeping the old wall of the town in sight. There were bamboo houses all along the banks of the river; they were either built on poles or on bamboo sticks of a man's height. Just opposite to where the stream divides there was a temple in ruins; some elephants are kept inside, and all was covered with shrubs and trees. Idols, of metal, wood, or stone, were scattered about on the ground, and between all these debris grew some of the ferns which were very common in these parts. Most of the wild trees were *Mimosa bigemina.* I went on, and saw a beautiful house of rest near a ruined Pagoda; this however was being repaired again and there were many Talapoins living near it. This house of rest was situated in the middle of the old town, which is still being inhabited and is situated on both sides of the stream. However, in the ruined town itself nobody lives, except such people as have something to do in connection with the elephants.

8.—Early this morning I went to the temple and hoped to make some botanical discoveries. It was easy to see how beautiful everything in this temple must have been, but now nearly everything was in ruins. One entered by a large gate lying a little higher than the rest, passed through an avenue, *Ficus religiosa* and mango trees, and arrived in front of the temple, which was a built on a small elevation of the ground. There was a large square before the principal entrance, and at both sides of this square steps for the ascent had been made; they were narrow, like those of all their buildings. The temple was very lofty inside and had no divisions. At the back there was a very big idol, painted black, and before it were placed some other idols in sitting postures, in the oriental fashion. Before these stood a kind of altar and upon it were placed different kinds of idols, both sitting and standing and varying in size. At both sides, as well as at the back, there was a broad free passage. I found here also the traces of the searches which the Burmans had made to find treasures both at the back and heads of the bigger idols, as I had seen in many other cases; even the high columns and towers were not free from these demolitions. As is nearly always the case, there were also here near this temple several other pagodas. There were only very few big trees here, but many shrubs. From here one could see a great number of temples, as this part of the country was rather elevated; but all these temples were in ruins. After I had stayed here a while, admiring, and reflecting as to what degree men can be blinded and carried away by superstition and wrong religious ideas, and as to the short space of time required to reduce so much to ruins, because these temples were still being used ten years ago, I turned to my botanical researches.

The first plant I came across was the European *Cuscuta* and the second one *Oxalis corniculata*, growing at the wall of the temple. Of a *Tetrandria*, of which I had found a very small specimen near Madras, having only a small superior corolla and a calyx winged at the corners, and which I had thought to be a *Hedyotis*, I found here an excellent specimen. *Ipomœa Hepaticifolia* was about one foot long and very perfect, but the white corolla was not much bigger than a mustard seed. *Mirabilis jalappa* and different species of *Trichosanthes* grew here wild; they were so entangled that I could hardly pass through. Behind the wall I found some specimens of the climbing *Volkameria* in blossom. I had seen them a year ago in the wanies of Ceylon, covering the highest trees. I found a shrub, having all the characteristics of the *Terminalia*, but I could not obtain any fruit. From this place I went on to a little hill, which was covered with the most magnificent blossoms that I, or any body else, might wish to see. Among these there were first two new kinds of *Justicias*, a splendid large double *Verbesina* and *Verbesina biflora*, *Verbesina acmella*, red and yellow *cannas*, *Clitoria ternatea*, with double blossoms of a beautiful blue colour, now and then there were some with white blossoms; *Ipomœa hepaticifolia*, beautifully large; one kind of *Ipomœa* with blossoms as long as a span, but most of them already closed. There were many kinds of white, violet, and yellow *Convolvulus.* Among these grew a shrubbery of *Ricinus* and *Ficus Dæmonum*, and *Asclepias gigantea.*

I hurried back, laden with beautiful blossoms and their seeds, and arranged them a little; then I went across the stream and took my way through a ruined gate towards the place where formerly the palace had stood. Before reaching it I passed many barns, built upon high poles; they had pointed roofs, these being two or three times intersected. These buildings were for the elephants. Before I reached the palace itself I had to pass another wall. The palace has very big dimensions, but only the very high walls of the audience hall of the king and the queen are still to be seen, which with some smaller parts must have formed a very high storey; only in regard to the doors or windows, they were neither sufficient in number nor proportionately large. It is a matter of wonder that the walls are still standing, because the woodwork has been burnt, and they rest only upon some single bricks. The king's hall is distinguished by four strong high pillars, which formerly surrounded the throne and are still standing. Down below I found a great quantity of ferns, amongst them a big Pteris. There hung a great quantity of *Dolichos pruriens* all about the low wall; they looked like grapes but were ripe and dry. Amongst them was a kind of pumpkin blossom with big yellow flowers, dark blood-red at the bottom; I was, however, not fortunate enough to find a single female blossom.

People still dig here after treasures, which are said to have been hidden here during the time of war, specially near the big temple and the ruins of the palace, and just the night before they had been fortunate in their researches. I could see the freshly dug out earth and the place where the vessel had stood which contained the treasure.

The trouble I took climbing about in the ruins was richly rewarded by the botanical treasures which I found here. I hurried back with them to my boat, and on my way I passed the house of a Siamese doctor. Before this house stood a row of trees in pots; they were about half a span high and 1½ span thick. Above them hung slantingly a bamboo, about four inches in diameter and 1½ inch long. This bamboo touched the ground and was hollowed out; some of the hemp growing here, about a finger's thickness, had been put into it, by means of which there fell a drop of water every three minutes on the pith of the stem. This is the way in which they revive old trees here, the crown of which is dead. After they have dug up the tree from the ground in which it grew, they cut off all branches down to the root, and plant this root in a pot, leaving about half a foot in width. I saw this way of treatment successfully used with some pomegranate and Chinese box trees.

In the afternoon I went again to the town and saw its west-eastern part. I found it to be a vast desert, having many swampy places, these latter swampy places had surely been cultivated formerly, now there was nothing more to be recognised than a narrow path; it lay somewhat higher, and was bordered with stones of one and a half foot length, the narrow side of which was turned upwards. This path, however, must also have been very narrow; it runs along the wall, and at one place there was a large trench. All about this place elephants were grazing, many of them being still very young. I was warned to beware of the big elephants, specially when nobody was with them. They are enraged because it was the time of their coupling-time, and at times I heard the male elephants roar very loudly. The number of elephants which are kept in this ruined town are commonly supposed to be 500. All buildings I came across this afternoon were ruined temples, and as I could conclude from the stones lying about, the houses of the inhabitants must have been very primitive. The temples, however, showed the greatest extravagance of Indian splendour, by much gold and many carvings, which must have been intermixed with small pieces of convex mirrors of many colours. In one place I saw some double spade-like figures on a pedestal, which were about three feet high and four to five inches thick. They were gilt on the outer side, and on the inner side they were painted red with carmine. The number of the temples in the town must have been very great, and they now offer a terrible spectacle, because so many of the vaulted roofs and high columns are all overgrown with trees and shrubs, so densely intermixed with climbing plants that there is a general belief that the town was filled with tigers. However, I did not discover any trace of such animals, but on the other hand these parts could offer refuge to more than 100 robbers, which could not easily be discovered here.

Most of the temples had towers of the afore-described kind, consisting of high pointed columns: there were others which had square columns for their towers. they were of equal thickness, only little rounded off at the top. and this kind formed the highest towers. Out of some of these columns trees had grown, and at their side there were niches. in which a row of small columns had been fixed. In one case there were figures of human beings in all sorts of positions to be seen. but I did not find a single one among these representing anything indecent, as is so often the case on the Coromandel coast. specially in Tanschaur. The posteriors and heads of all the bigger idols here were cut off. Most of them were painted black. intermixed with some gold.

The most remarkable botanical discoveries which I made in these ruins. were *Conza balsamifera* trees. they were generally growing at two men's height. *Acrostichum Siamense*. *Pteris Vittata*, *Asplenium* grew near the temple, which offered the most desolate aspect. The pools of water were covered with *Pistia*. *Limnanthemum indicum*, *Nymphœa*, *nelumbium*, *Sagittaria*, etc. The most common trees were. *Ficus religiosa*. growing almost everywhere among the walls. together with *Mimosa bigeminia*. There was a little tree of *Ficus religiosa* growing right at the head of a big idol. The double *Verbesina* and a kind of *Impatiens* grew also frequently near the pools.

I saw hardly any other birds besides the common *Alcedo*, wild blue pigeons. water hens, many Malabar birds, ravens, and martins.

In a bush I saw an Indian hare. with his half-naked neck, only covered with short soft black hair. The *Sciuri* are much rarer here than on the Coromandel coast. and the Palm squirrel, which is generally so common, I have not seen at all here.

At dark I went back to my boat, well laden. and we returned to our quarters of the preceding night, the Chanterii.

9.—Early this morning I went again to the place where I had found so many beautiful flowers the day before, in order to obtain the fruit of the *Quisqualis*, if possible. and to search for other seeds. There is an excellent view also from this place; one sees in the west the mountains of Popli, and in the north east those near Banksay. From here I went across some swamps and trenches to a place where near the ruins of a temple, some seminaries of Talapoins were situated. In one of these temples I was shown two pictures of the giants, or Adamans, which are said to rise from out the earth in the month of November to kill all Siamese. Their figures were indeed horrible enough to frighten simple-minded people; the idols which were to be found at one end of the temple were represented in standing postures.

From here I went again across a swamp to a little hill, which was closely overgrown with trees, specially with *Ovieda mitis* of Burman, which however had long big pods and with the *Mimosa bigemina.* There was a ruined temple here, the the idols of which were made of gilt, brass, or tin. They were however all scattered over the floor, and most of them had lost their heads and arms. In front of this temple a very large swamp expanded, wherein some elephants were grazing, and behind this swamp I perceived a very big forest. My curiosity impelled me to inspect them both, and at the same time to examine the Florades swamps, in which so many kinds of *Carices Junci*, *Scirpi Potentilas*, and *Eriophori* usually grow in Europe, but here I found in the deeper places *Utricularia major* and *Impatiens triflora.* In all the other places there grew nothing but a wild shrub, with far. spreading panicles; in dryer places was some *Panicum grossarium* intermixed with the former, and higher still some *Melochia corchorifolia* some *Pentapetes phœncea* and among them *Panicum colonum* and *Agrostis cruciata.* I reached the wood, which lies somewhat higher, but has many ditches and pools. The soil consisted here of a fine grey clay, with some yellow veins containing iron. The trees were mostly bamboo, a few Tamarind trees, and another kind of high trees as yet unknown to me; they had simply pinnate leaves. The brushwood consisted of *Mimosa bigemina*, of different kinds of *Capparids*, and the *Oxyacantha Zanonica*, Rumph, *Hort Amboin*, Auctuar, pag. 38. tab. 19 (*Carissa spinarum*, Linn.) There was a new species of *Pavetta*, the leaves were lancet-shaped, smooth, and shiny, and had strongly curved prickles growing in opposite directions, and the blossoms had a very sweet perfume; they grew several together in the angle of the leaves. I obtained both blossoms and fruits of this tree, but the latter were not yet ripe.

Towards two o'clock in the afternoon I returned to my boat; we had no wind at all to-day; the thermometer showed twenty egrees of Réaumur. After a little rest, I went back to the town, and tried again to get the female blossom of the kind of pumpkin, but in vain; but climbing along the ruined wall, I found some splendid specimens of the *Quisqualis*, of which most blossoms had opened, and were of a beautiful orange colour, but those which are not in full bloom yet have a greenish white colour. At another place I found the new species of *Clerodendron* growing to man's height, and so closely together that they almost formed a wood, but the blossoms had not reached their perfection yet. A kind of grass had been sown, which much resembled the *agrostis interrupta*, the under side of leaves was quite white. This grass had been sown to produce a kind of hemp; I did not succeed in procuring myself any of its seed, though I offered much money for it.

At four o'clock in the afternoon I started on my journey back, and went down the stream along the wall. I saw many breaches in this wall which the Burmans made at their last conquering expedition. The town seen from the north-western side offers the appearance of a half-moon, with only a few projecting points. I went ashore at different places, because the city wall has many gates. There were few other buildings to be seen besides the temples, and near them grew high trees of *Melia*, *Orieda*, *Ficus religiosa*, *Michelia Malaccensis*, etc. In one place I saw some ripe fruits of the *Rhamnus Theizans*, which I gathered, and at the same time I sent one of my people up a high tree whereon some parasitic plant was growing, but the man had the misfortune to fall down, because a dry branch broke. He fell upon an old stem and hurt himself especially in the region near the heart, so that he lay on the ground as if dead. This circumstance made me uneasy, and I hastened our return. I saw the extensive buildings of the former Jesuit college near the bank of the river; it was situated in a beautiful part of the country. The approaching night prevented me from making any more examinations. We travelled all the night through; the weather changed, and we had many small showers of rain; in the afternoon we arrived again at Bangkok.

12—I was busy these days arranging my collection and specially drying the seeds.

13. *Sunday*.—I called on the bishop residing here; he is an old man and seems to be very pious. My chief object was to inquire into any circumstances which might be interesting for me,

and my task was the easier as he himself has studied medicine in Paris. At this occasion he promised to give me a compendium of a grammar of the Siamese language.

When I came home, I heard that there was a female monstrosity to be seen in the Portuguese fort. This woman had formerly lived in Inthia, but now she had grown poor, and was obliged to beg for alms in the country, but by order of the king she had been brought hither. She was about forty years of age, or medium height, her feet were smooth and well proportioned. All the rest of her body was covered with smaller or larger warts, they were densest near the nipple of her left breast. The head was extraordinarily big, the left side of her forehead was only covered with small warts, and the eye on this side was perfectly sound, only very large, the cheek, the mouth, and the jaw, on this side were quite normal, only proportionately large. At the right side there was a fleshy growth, beginning at the crown of her head, covering half her forehead and the whole place were the eye ought to have been; the fleshy growth even increased at this place, and covered half the nose, and there was no callus to be felt, and even on the left side the nose seemed to be quite flat and had no callus either, but only the partition of the nose, which formed a natural opening at the left side. There was a wide flat furrow, running along the right side, which divided the fleshy growth, and about two inches from the nose was a wide opening, into which one might have inserted two fingers, out of which flowed a white mucous slime. The left corner of her mouth was, as I said before, normal, only by the constant use of only the one side it was somewhat lengthened at the upper part. At a little distance from the left corner of the mouth a hanging sort of growth ran along the lips and these lost their shape completely, they grew flatter, and ended in a small white strip, which was also moistened with saliva. The whole growth forms a sort of flat swelling, from the crown of the head to the shoulder; from there it hung down, so that no jaw could be distinguished; at the neck it was also loose, and hung down, like a wrinkly rag, about two inches thick. In the place of the nostrils there was a furrow, and lower down under the navel this growth was divided in two lobes; it grew a little thinner but kept the same width. The inner lobe hung down as far as the middle of the thigh, where it diminished in width, but increased many times in thickness, and ended in the shape of a club. The other lobe hung down as far as the knee and ended in the same way. The gums were very thick, and she only had teeth at the sound side of the mouth. Her hair was still black, for the most part standing straight up, and on the growth itself it was rather thinner. After she had been on view for one day, the king sent her back to her home, and gave her a little present.

16.—I made again a small excursion to collect seeds and some new specimens for my flora. I found a beautiful *Ajuga*, with blood-red leaves and beautiful blue blossoms.

18.—I went to a temple, situated about half a mile from the town. There I found some very beautiful *Celosia*, some with yellow and others with red blossoms; I obtained both blossoms and seed thereof. I came across a big tree, which had big oval leaves, three of them always growing together, but it had no fruits yet. There was a large sugar plantation here. The roots of the sugar canes stood in a kind of watery soil, but the earth had been heaped up round the stem. At their side grew an *Arum?* to half the height of a man.

In a ruined temple I saw some of the minor idols, which were ranged in standing attitude before the chief sitting idols, they were painted black and had gilt faces. I obtained several rare kinds of seeds, and I saw some goldfish being kept in vessels by some Talapoins.

19.—I obtained a *Cecilia*, the skin was like shagreen and of a dark brown, rusty colour, it was about 1½ feet long. There were some oblong dark spots at its side, which were more conspicuous near the head. The whole body is rather compressed, especially the stomach, which, however, widens considerably near the back extremity. The skin of the stomach is so loose that it can swallow many larger animals. This class of animals live here in the streams and find their food mostly between the bamboo-poles on which the houses are built; they are able to swallow a chicken's egg entirely.

(Also) An *Anguis Scytale?* but it had 194 scales at the stomach, and three scales at the tail. The head and back are black; the edge of the mouth is white. The stomach has a blue-black colour, with broad white cross stripes, which divide near the tail in the middle of the stomach, and further back they are almost alternate. The short tail is yellow at the lower side, with a few black spots. The whole animal is about twenty inches in length and one inch in width.

20.—I went again to a temple, which of all the temples I have seen here in Bangkok is the most magnificent. The portico and whole facade were gilt and ornamented with rich carvings, intersected with green and whte mirrors. The columns, being covered with so-called leaves against the evil spirit, were all still well gilt; and behind the temple, in a niche, a gilt idol life-size had been placed. There was a brook close by this temple, and near it were many Chinese tombs, built in the shape of houses, but being only two feet high and proportionately long and broad. In the front part there is a wooden board instead of a door, whereon are painted Chinese letters, partly red and partly black. Near some of these graves feasts had been held lately, and some vessels still stood before these painted boards, leaning against the front part. On these graves grew a kind of *Justicia*, the blossoms of which were borne at the extremity of the branches, at the angle where they joined the principal stem. They had extraordinarily wide pointed bracts. Amongst the *Justicia* grew very high trees with oval leaves, which at the lower part of the stem produced much resin; their bark resembled that of the fig trees. Behind this temple a large expanse of forest had been cut down; as soon as the weather becomes dryer and the cut-down trees themselves have dried a little more, they are to be burnt. *Hedysarum Strobiliforme* was here in full blossom, but had little fruit; at the same time I also obtained *Pæderia foetida* with ripe fruits. There was a large seminary for Talapoins here. In the afternoon I went with my boat up-stream to a temple situated two and half miles from my quarters, in order to collect some of the seed of a *Phaseolus*, which seemed unknown to me; and I was successful. I penetrated a little into the wood, and came to a place which was dried by the heat. Here I found many specimens of a plant, the leaves of which resembled those of a Musa, only they were much smaller. The stems of some of them were more than two men's height, and not much thicker than one and half inch in diameter near the club-shaped root; there were neither blossoms nor fruit. I dug up some of the roots, which smelled like civet, and tasted aromatically. It seems to me to be identical with the *Lampujum majus* of Rumph in his 5th vol., tab. 64, fig. 1.* In the evening, at eleven o'clock, I let my boat float with the out-going tide of a small arm of the river, which empties itself into the sea, near the town of Pipli, so as to have an opportunity of reconnoitring this part of the country as well as the time would allow me to do. At the extremity of the town, I passed one of the houses of rest, which was illuminated. These houses of rest, generally serve the purpose of delivering sermons or prayers. I could see a young Talapoin sitting in a high, ornamented armchair; he was holding a palaver; on his knees lay one of their books, and before him, on a wooden pedestal of one and a half yards high, was fastened some iron in the shape of a cresset, carrying many burning lights. Behind him sat two old Talapoins and his andience were lying on their knees before him, listening to him devoutly. I continued my journey through the night, and everywhere I came across some boats carrying torches. The people in these boats were engaged to fish either with the angle or with nets, which were tied at the four corners to two bamboo sticks, crossing each other in the middle. These nets seemed to be very useful, as they caught a great quantity of a kind of black broad fish in the muddy soil, and the further I came the more boats I saw and men engaged in different ways to catch these fish. There was this remarkable fact to be observed, that wherever there was a temple or a dwelling of any Talapoin, the water was crowded with all sorts of fish, for neither near the temples nor in the presence of any Talapoin may they catch fish. A Talapoin called out to one of my servants, that he ought to know better than to hit any fish in the presence of a Talapoin, because my servant had as a pastime aimed at the fish with a thin bamboo stick. My people caught many of these fish with their hands.

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* *Zingibere.*

I went down the river until the turning of the tide; whereupon I returned and went ashore near a temple in order to collect new specimens for my Siamese *Chloris*. I found a kind of *Didynamia*, with included capsules, which are sometimes reckoned among the *Rhinanthera* by Linné. It had orbicular leaves, the blossoms grew in verticils round the stalk, but they were not much larger than the calyx, and woolly; in this regard it resembled the *Leonitis*. I came across a very rare kind of *Melochia*, with ripe seed. The trees forming the avenue were *Saraca*, *Orieda*, *Mimosa*, intermixed with the *Ficus religiosa*. The temple was very large, but ruined like all the others. The dwelling places of the numerous Talapoins were here exceptionally regular, high, and very gorgeous. On my way back I stopped near different temples, because around them is generally the greatest variety of plants to be found. However, I did not discover anything new, only a *Convolvulus* with ochre yellow blossoms, which were however rolled up. They grew together on a common stalk in the shape of an umbell, which was of medium size. The leaves grow close to the stalk, they are heart-shaped but at the wider side of the heart they are angular and at the other extremity they terminate in an oblong manner. I obtained many kinds of seeds, especially good ripe ones of the *Cassia alata*, which has nine to twelve pairs of leaves. There were many trees, either without foliage, or just forming new foliage; these all were unknown to me.

29.—Through all these days the Roman Catholic Christians held their festivities. They are all in the service of the king of Siam, and almost all natives. I had the opportunity to see the king's dancers, who had been brought hither from Pegu; I also saw a dumb-show, a kind of comedy. Their musical instruments consisted of a peculiar kind of violin, only having four strings and a long neck; the sounds produced by this instrument were very much like the human voice, and in the shape it resembled the one which Kempfer has drawn. Furthermore they had a kind of flute, which squeaked more appallingly than an Hautboy; another flute of bamboo, which produced very agreeable sounds. They put the whole end of the instrument, which is as thick as that of our flutes, into their mouths before they could produce any sound. Then they had two kinds of ordinary little drums, one of them consisting of a vessel, over which common leather had been fixed, and the second kind resembled a little barrel. But the most remarkable sound was produced by an instrument consisting of nineteen pieces of bamboo the longest of which was a little more than a foot long, and about three inches wide; they grew gradually shorter and narrower, so that the nineteenth was only three-fourths of a foot long and a little less than three inches wide, but much thinner. All these pieces had two holes at their ends and were joined by means of strings and fastened upon a long piece of wood, curving up at the ends and hollowed out in its whole length, so as to resemble an ordinary trough, but with that difference, that the sides were quite straight. The performer hit these pieces of wood with two club-shaped wooden sticks, which were covered with linen on the part which touched the bamboo, and the effect produced was that of chimes; there was no clattering noise, as the two wooden sticks with which he played were covered with linen.

Another kind of chimes was produced by an instrument which consisted of an oblong ring composed of thin split bamboo sticks. Its outer circumference was four and half feet; it was three feet wide and more than half a foot high. The width of the ring proper was more than half a foot and it was a good hand high. It consisted of bamboo sticks of one finger's width, which were tied together in such manner, that the surface had only a few cross-sticks. However the little sticks, placed perpendicularly were sometimes so much longer that the ring was lifted from the ground and was about one foot high.

Between these last mentioned sticks fourteen brass lattens were fastened, resting horizontally on strings in such a manner that they neither touched the bamboo sticks at the side nor one another, but they could be moved in all different directions and their number filled the whole ring. Each of these lattens is convex at the edge, and concave at the other side, but in the middle they bulge out and are about an inch higher forming a rounded sort of surface, this raised place is two inches in diameter. The thickness of the metal is between 2 and 3 lines; they vary a little in size, according to the tone which they are to produce. The performer sits in the middle of this ring on his feet, after the oriental fashion, and with a little stick, about one foot in length and as thick as a little finger, widening at the end to the shape of a ball 1½ inch thick and covered, he hits the fourteen lattens which almost surround him. Sometimes he touches the edge, sometimes the middle, according to what strength he wishes to produce, and all this is done with wonderful quickness.

The male and female dancers wear a heroic sort of costume. They have crowns on their heads, which are about two fingers wide at the lower edge, and have unequal branches, those in front being the highest. They wear a sort of wingshaped ornament for their ears, which is almost as high as their head, and both the crown and this ornament are gilt. The hair is tied behind and parted in the middle.

I asked one of the chief doctors of the king of Siam about their medical instruction, but learned very little from him. He said that their chief books on medicine had been burned or taken away by the Burmans, and I had much difficulty to get a look into the books which had remained intact. They don't know anything of the pulse; in its stead they feel the heart, and from its beating, the temperature and kind of pespiration, they judge the nature of the illness, But they believe themselves to be better doctors than the Burmans, because the latter do not understand any measuring of the beating of the heart.

They sing to the invalids who are deadly sick and pray for help to one of their first doctors, who was said to have treated one of their great idols; they shut the door of the house, that no evil spirit may enter, and in case of a merchant being ill they even close his shop. They don't understand anything about anatomy, only at times they dissect children in order to find the cause of an illness. They believe that the seat of the soul is in the pit of the stomach, because this is the most sensitive part of the body in case of any illness or passion. They do not know where the first germ of human life in both sexes has its seat, both soul and life after their opinion come from heaven.

The heathens here take also part in the New Year's festivities of the Christians, like the natives of the Coromandel coast, in so far as the festivities regard the New Year's gifts. The Romish Christians inaugurate the New Year with drunkenness and the vices issuing from it,

As the ship was said to start from here in a few days, I went out in the afternoon to fetch some roots of the different Cannas and a new kind of Clerodendron. -

2.—To-day we, saw the Cochin Chinese dancers; in reality only two of them danced, three others played on different instruments, consisting of two little drums and a kind of Zither, an instrument of three feet long and ¾ of a foot wide, having everywhere the same length and being convex; upon it were fastened some brass strings. The girl who played it, used her nails for this purpose, which were almost an inch in length, and were guarded with a ring, so that they should not break. The dress of the dancers was Chinese; they had no head dress, their hair was tied in a round bundle on the top of their head. They wore a long dress, reaching down as far as their knees, and open on the both sides, but only little open on the breast; this garment had white sleeves. Underneath this they wore some kind of white trousers, reaching down to the ground.

While they dance, they are constantly singing, the time of these songs, as well as the words, being very monotonous. One could distinguish nothing else but the ever recurring end-syllables of ang nang, etc. Their dance was just as monotonous; they stood for a long time side by side singing, and with the fans which they carried in their hands, they made some circular movements, or fanned themselves; at times they beat time with their fans, then they faced each other, advanced three or four steps, and went back again; then each put one foot so much out that their knees touched, and this they repeated several times. In the end one of them stepped aside and poured out a glass of wine to each of the Europeans out of a bottle which had been handed to her for this purpose. This glass of wine was to be paid for and they continued singing through this whole performance. This was all that the pleasure consisted in.

3.—Early to-day I went with my boat along the minor arm of the river, which takes its course to Pepri and to a temple which is called Wath Saiskoy; my aim was to get some blossoms of a tree which had not been in blossom before. Just this day there was a festival being held here, and the front and upper part of the new temple were covered with white linen. The idols themselves were covered with a painted cotton carpet and there were many framed pictures on the walls, most of them being Chinese productions of art, representing buildings, and pleasure walks; only few of them painted by Europeans. Between these pictures being some European looking glasses, placed there without any order, and at the feet of the idols, two lights had been laid on the ground, and round them many small lights had been placed. The real festivity was celebrated before the gate of the temple, behind a large white cloth; dances, comedies, and music were produced alternately. I was told that all those who had come there without bringing anything to eat were treated by the others, who for that purpose had a great amount of food prepared. The botanical aim of this excursion was to visit several trees, which I had not found in perfect bloom before. Amongst these was specially the Durion tree, the blossoms of which had developed much more since last I saw it, but had not attained their full size yet, so that I cannot say with certainty that it has a double calyx, or that the outer part is rather an Involucrum, but I made a description of it as well as I could I obtained some roots of the *Plumbago coccinea*, and some ripe seed of the *Saraca*.

In the afternoon I went into a ricefield, which was dry at present, where I found various seeds of *Hedysarums*, of the *Phaseolus inebrians* in Badhaum Herm mus Zeyl pag. 55, and several other kinds. On my way back I passed a Chinese pagoda, the beams of which some parts of the woodwork inside were painted with beautiful bright colour, which made me inquire after the oil with which these colours had been prepared, and as I had the good luck to enter the house of one of the richest Chinese merchants, I received the information that the colours were mixed with the finest so-called wood oil, which is quite white. I bought a bottle of this oil for an experiment, and paid one Zubug for it. At this rich Chinaman's place I saw many sorts of trees, the stems standing hardly a hand wide above the ground; they were four to five inches thick, and were planted in flower-pots. From these stems issued thin short branches, bearing blossoms. This whole arrangement was of the same nature as that, which I had seen in Inthia near the doctor's house. This Chinese merchant had also a little temple for his own private use; there was a kind of altar erected in it, upon which was placed the sitting figure of a stout fat idol, with small eyes; near it were some books and other figures. This temple stood apart in the garden, some steps leading up to it, and round this temple, which was about six steps long and four steps wide, there was a covered passage. It was made of wood, covered with many pictures, and specially at the farthest end there were many representations of man after death; below these were represented punishments, in some metamorphosis into hideous animals was depicted, others lay in flames, other were devoured by hideous animals. Those who had killed many animals were devoured by long beaked birds, etc. The blissful condition, after death was depicted as life in fine houses with beautiful women.

From here I went to the Chinese chemists, who are doctors at the same time. I found there a kind of oil made by infusion. I inquired for some ethereal oils, specially for *Cajeput*, but it was either the fault of my interpreter or the ignorance of the chemist, which prevented my finding anything like it. I bought another kind of oil, which was green, and had a bad smell, it was an *Oleum Coctum.* Most of the remedies which they keep in their shops consist of herbs and roots, which are packed up in little parcels of about one pound's weight, with the name of the contents written on the outside. These parcels fill up the upper part of the walls, while lower down stood some glasses and vessels in no order, of unequal size and shape; below these were a few drawers for minor articles, as cut roots, seeds, etc. The chemist also had some medical books in big octavo; they contained some miserable woodcuts from plants, about one inch in size, but I could not really recognise one among them all, and the anatomical figures were of a similar kind. As for instance, the bowels were designed in five equal rows, lying horizontally one on the top of the other, a testis, like an upturned bottle, from which rose three tubes. The same manner of treatment was followed as regards representations of animals and stones. I should have liked to have bought these books or to have found out their names, but did not succeed in doing either.

4.—In the middle of the day the ship sailed from Bangkok, and I was glad to leave this disagreeable place, which only as far as natural history was concerned had given me some pleasure. But before I leave it, I will make the following description of it. The stream divides the town into two principal parts, one of them is situated at the right side, as one goes up the stream towards the north, and has formerly been a French fortress. The other part lies at the left side towards the south and belonged to the Portuguese. The French town, as well as that of the Portuguese, was oblong in shape, and they both have small fortifications along the stream, consisting of solid ramparts and walls; there is also a wall all around each town, and at the side towards the land there is a deep ditch, which is navigable for small boats. There are few batteries on the walls outside the fortress. The wall on the ramparts, which has more than a man's height, is divided into leaf-like partitions, being so large that a man could stand in them.

The French town begins a little before the former Portuguese one, but does not extend as far at the other end. It is intercepted by ditches, navigable for boats; like the whole country it lies under water in the rainy season; its lanes are somewhat raised, irregular, and narrow, and only very few places are paved with large bricks standing on their edge. In many places nothing has been built, and these places are generally transformed into swamps. The houses are all built upon bamboo poles or rafters, about one man's height above the ground. Most of them consist of bamboo and matting which has been made from the Nipah Palm. Only the richest fill these bays with planks. The temples alone are generally built of bricks, and are situated on more elevated ground. This part of the town is only inhabited by Chinese and Cochin-Chinese, they have a chief of their own nation. A prince from Cochin China also lives on this side, and also a beggar prince from Canco, who fled hither on account of an insurrection that had broken out against him. I visited them both to-day. All along the stream there are many swimming houses, mostly inhabited by the Chinese who have shops, and also by some artisans, as shoemakers, pewterers, colour-merchants, etc.

Such a house is built on big bamboos, which are enclosed by strong rafters. and they have nearly all two roofs. The first roof covers the shop or the work room; it has generally another little roof added, which however is lower than the principal one. The room behind this is the place where the family lives. At both ends there are still some rooms, one of them forming the kitchen, the other the living-place for the servants. When such a building is new it floats about one foot above the water, but it cannot last longer than four years at the utmost, after which period it has to be destroyed, and rebuilt on new bamboo poles. These houses are all built in firm bays, filled with planks of wood. When such houses have been standing for some time, they are filled with all sorts of poisonous snakes, mostly water-snakes. People go with these houses often from one place to another, mostly led by prejudice and superstition if there have occurred too many cases of death or misfortune in any family. The remote part of the town before the walls, is inhabited by Cochin-Chinese.

The former Portuguese town is now inhabited by the Siamese. The King himself lives in the first fortress. The streets, houses, canals, and the soil are like those in the French town.

The palace of the king is built of wood, and irregularly covered with tiles; it consists of several smaller houses, lying close together. There are no swimming houses before this town, except one swimming pleasure house for the king. It is open on all sides and has a low gallery around it. Inside there is a partition made of turner's work, which is the king's real place, and before this stands a large gilt chair of old-fashioned shape and ornamented with paintings. The whole front of this swimming house was painted and gilt, and the roof was covered with palm-leaves.

There is a second swimming house for the queen close to to the king's; it has walls and shutters, is a little higher, but only half the size of the above-mentioned one.

In both these towns there are elephants kept in the unbuilt places; they live in high barns, especially built for them; they are daily led out for their walk, and must daily be washed. Round both parts of the town there is a number of houses built close to the town walls, most of them at the side of the big river, but there is seldom more than one row of these houses.

In this part dwell the bishop and two priests, all three of the French nation and also paid by the French, but ordained by the pope himself. The houses still continue in single or double rows for a long time after one has left the town, on both sides of the river. Their inhabitants are people from Pegu or Leo (Laos), or a few Burmans, having been brought hither as prisoners of war; they have either adopted the agricultural life or have taken to manufacturing, for which occupation they are particularly suited. The magazines of Sappan wood belonging to the fugitive king of Leo on the left, and a temple on the right side, end this suburb, so that the whole length of the town, taking all in all, is about two English miles.

On the arm of this large river, which is about a gunshot wide, lies another suburb. The rivers divide close before the Portuguese fortress, and the smaller arm runs in a south-westerly direction towards the sea. On entering this town, one also sees many swimming houses, and also some built on poles; the town stretches about one English mile along the river. There are also many kinds of shops here, specially some booths, belonging to Mohametans.

At the month of this river there is a bazaar or market, consisting of boats in which all sorts of victuals, as vegetable, fish and pork are sold. This arm of the river forms yet another minor arm, which surrounds the whole Portuguese town, and on the left bank of which a great number of the king's boats are sheltered. A very small arm of the river surrounds the former French town; there are fewer houses built outside its wall, and they are only inhabited by Cochin-Chinese.

The principal river, which affords many means of existence to the people, and which divides the two parts of the town, changes its course first from east to north-west, but at the beginning of the Portuguese town it turns with a curve towards the north and continues in this direction for some time after it has passed the suburbs.

The stream at the eastern extremity of the town is about 500 feet wide; it is narrowest at the beginning of the former French fortress, but widens again and is twice as wide in the curve, after which it grows almost immediately narrow again. Its depth at the place where our ship lay at anchor was about thirteen fathoms. In popular opininon this stream is said to come from Tartary; it is certain that it passes the kingdoms of Leo and Barman, and that at times Chinese boats from the inner part of the country come down with its current. In spring, or in the month of February, it causes an inundation in these parts, and the water then assumes a red colour, which however only lasts for a few days.

The water is always turbid here, because of the mud which settles at the bottom of any vessel when kept there overnight. It contains little salt, but if taken from the river, it gives diarrhœa and the Indian dysentery to any stranger. At the time of inundation the water is said to be salt here, and even higher up the river.

One can only perceive the effects of tide in this stream once in every twenty-four hours, the difference between high and low tide at the time of inundation being one fathom and the current at that time is said to be very rapid. The water abounds with all kinds of good fish.

The trade of this place principally consists of export of sappan wood, aloes wood, or *agallochum*, and an inferior kind called *May Crisena*, this latter being a tribute which the inhabitants of the provinces of Ischanthebuhn, Cambodia and Concao, have to pay to this king. Furthermore they export tusks of elephants, gutta, and salt. Formerly gold and silver could be bought here with great profit, but since the war this trade has sunk considerably. Gold is said to have been found in large pieces near a stream on the way from Mergie to here. The present king however does not permit any digging for gold any more, in order not to furnish the Burmans with an excuse for new invasions, which they have to fear every year again, and just this very year he had sent out armies partly for the purpose of guarding the frontiers against these guests, and partly to conquer the capital of the kingdom, where the usurping brother of the king of Leo, who is living here, defends himself. The silver, which was sold here formerly, is said to have come from Leo, and was very friable. As I have mentioned the place where they found the gold, I will add the tale of some Christians, who made this journey, concerning a class of creatures, which are probably the Homo Lar of Mr. Arch. v. Linne. This animal is said to walk erect, and to live principally on honey, and as the Siamese consider its skin and flesh to have some medical virtues, they kill it in the following manner. Those who go out for this purpose take two bamboo sticks, of about an arms length, which they hold close to their arms. As soon as the animal sees the man it comes up to him and seizes one of his arms, with signs of joy and as if it wanted to caress him. The man drops one of the bamboo sticks, which the animals keeps in his paws, and which it contemplates with joy and admiration; meanwhile the man sizes the other bamboo, and hits the animal over the head, until it is dead. The animal is said to be good natured, but it only lives in the densest forests.*

The best articles for trade which one can bring here, are all kinds of linen, surah silk, or materials embroidered with gold, also silk from Bengal.

This country moreover is amply provided with all sorts of articles from China; they are exchanged for the above-mentioned goods.

The most important trade is made by the Chinese living here, the king himself favouring it, but the greed for riches of this latter and the constant fear of rebellion, are very great drawbacks for trade. The king wants to be the first seller of the products of the country, and buys the best goods imported at a very low price, selling them again to the merchants of the town at 100 per cent interest.

The soil in these parts is very fertile, and particularly suited for the cultivation of rice, because it has abundance of water and it very rich. There are generally two harvests of rice yearly, the first one being in December. In January the fields are mostly dry, and then they burn all the stubbles and the grass which has been growing during the rainy season, the ashes furnishing the manure for this clayey soil. Along the banks of the river only there is wood, from 100 to 1,000 feet wide, and behind this wood begin the never-ending rice fields. The inhabitants of these woods live in houses which are built on bamboo poles, a man's height above the ground; these houses are built of split bamboo and palm-leaves. They have their gardens in these woods, and have rarely any hedges, but as the soil is so very fertile, long deep ditches have been made, cutting it in all directions and being commonly so broad that a man can jump over them. Deep in the woods one sees now and then such ditches; the ground thrown out of these ditches, raises the soil and prevents it from being inundated too often; such raised part of the soil is seldom broader than three to four steps, and pretty long, the width naturally depending on how low the soil was originally and what height is required to ward off an inundation.

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* The Wawa, *Hylobates Lar* is intended.

On this raised part they sow all their vegetables and plant their pisang shoots. Now and then one sees black pepper climbing on an *Erythrina*; all other fruit trees grow wild, several eatable kinds of *Dolichos* grew wild at the banks of brooks and rivers, among the frequently occurring *Verbesina biflora*, *Coix Lachryma-Jobi*, and others. Most of the wild trees were at this time almost without leaves or blossoms; some had half-ripe fruit, so that I could make out little about them. One *Diospyros* was in blossom and had fruits, which I described. *Spondias ambalam* began to bloom, but had no leaves. Here and there grew some kinds of figs as *Ficus indica*, *bengalensis*, *religiosa*, etc. I often saw *Michelia* growing wild and very high and also *Cratæva Marmelos*; these are the chief kinds which I recognised.

Among the bushes there were some small kinds of palms, which I have partly described, specially the *Aralia*, *Phyllanthus* with white fruits, the one which Burman reckons among the *Rhamni* and called *Vitis idea*; an *Allophyllus*, which had large orbicular leaf auricles,

There grew many kinds of grasses in the ditches, they were very high. The *Lachyma-jobis minor* of Burmann was the tallest and most frequent; *Saccharum spontaneum*, *Arundo kora*, *Coix Lachryma*, and one kind of broad grass, which seemed to belong to a special class, resembling the *Apluda*; above all the *Panicum dimidiatum*, were the most frequently occurring grasses.

The kinds of plants I saw were: *Piper Malmire*, very common, but it disappeared soon, and in its place grew a newly described beautiful *Justicia*, followed by another, which had long, oval-shaped, hairy leaves. In some places *Plumbago* grew very frequently, and *Canna indica* was very common here, specially the red blossomed one; that with yellow blossoms was rarer. All along the foot-paths grew a kind of weed *Hedysarum* which I had not seen on the other bank.

The character of the nation is peaceful, gentle, obliging and curious, and the corruption of their morals has been produced by the intermixed Mohametans, who are here, like everywhere else, a vicious class of people, and by a hard and cruel Government. Their chief sin consists in a kind of venereal disease, and dissoluteness resulting thereof. Besides the Mohametans. the Chinese have had a bad influence over them; they are mostly inclined to deceit and are very cunning in every respect. The dress of the men and of the women is almost alike.

The country swarms with Talapoins and temples. The Talapoins live in the most agreeable parts of the country, but I have seldom seen an old Talapoin. This has its cause in the fact that most people send their boys to the Talapoins, where they are instructed in reading, writing and religion, and if this calling does not suit them any more they choose some other profession, whatever they think they will best succeed in. Therefore near the temples, which they generally call Watt, one is surrounded by boys and young people. Sometimes their houses form little villages. A Talapoin has his hair shorn, and generally wears a brown, or lemon-coloured, long piece of cloth across his shoulders and another one round the body, which however is not taken up again between the legs, as other men generally wear it. As long as they follow this calling they cannot marry. I could not learn much about their religious ceremonies, because they never would converse with me about religion, but as I was near their temples almost every day, I have heard them saying their prayers between three and four o'clock in the morning, also in the evening at sunset, and heard them preaching between ten and eleven o'clock at night. At other times I have found them reading, singing or working in their rooms. I also watched them making some ornaments for their idols or their prayer houses, or preparations for the funeral ceremonies of a rich Talapoin, or even working at their boats, and I saw that the young men worked while the more experienced showed them how to do it.

The present king has gained the kingdom by his bravery and cleverness. On his father's side he belongs to a kind of Siamese aristocracy, and on that of his mother to the Chinese. At the time when the Burmans invaded this kingdom he was governor over a small part of the country.

The Burmans committed the fault of going home with their booty after they had robbed and plundered the land, and only leaving a few people under a governor's command in Siam, who were not even able to prevent the Chinese living in the country from breaking the idols and ruining the temples. The present king saw this; he waited for a favorable time, circumstance and opportunity. He surprised the Burmans left in charge, and treated them with such severity as they had deserved by their former cruelties to the country, and in a short time he conquered the whole land, because all came to him on account of his success, and after he had re-established order, he proclaimed himself as their king. He is rather small in stature.

His character is not one of the best, as he allows his anger to over-master him completely and for small crimes he has people beheaded, regardless of what rank they may be. His sons, most of them grown up, his nearest relatives, even his generals and ministers, he has had at some time or the other publicly punished with rotan sticks, and as the Siamese seldom wear their jackets one can see that all the grandees have had their backs torn with the rotan whips.

Moreover he is jealous, fears everybody and everything, and is grasping, and with all that he believes that according to their religious creed he will one day be a god. To be able to draw breath so that one does not perceive any movement in the pit of the stomach, is considered a sign of his commencing divinity. Moreover there are some other sure signs thereof, consisting in his being able to sit perfectly rigid for hours like the idol Rill, with meditative features and fixed eyes, and lastly he believes that by reading he is going to have white blood, as the gods are said to have that too. With these capacities he believes he will finally succeed in flying.

He relates all this nonsense to all who appear before him, and asks them whether they do not think them possible, and whether they do not believe that one day he well be able to fly, whereupon he is assured by all his courtiers, doctors and Talapoins that he surely is right.

Unfortunately for the old bishop and his two priests, he had them brought before him two years ago, and also questioned them about these things and whether they did not think them possible. As they all unanimously denied this, he ordered each of them to be given 100 strokes with the rotan sticks; some other Christians had the same fate. Afterwards they were laid in irons, and thrown into prison. The old bishop remained there for one year, the others were released after half a year, but the old man still suffers great pains from the wounds which the iron has made in his feet.

Another story of his cruelty, which happened shortly before our arrival, runs as follows: His hair-cutter had shorn his hair a little unevenly, because he was short-sighted. The king looks into the looking glass himself; and asks afterwards his oldest prince and his nephew, whether his hair was properly cut, who both say it was. Hereupon he goes to his women, who do not approve, or perhaps laugh at him. He returns in a fury, pronounces death-judgement on the old hair-cutter, and orders his son and his nephew each to receive 150 strokes with the rotan, which are immediately dealt out to them. One of the old ministers begs for the prince and offers his back instead; he also is flogged immediately. The hair-cutter was beheaded three days after, for the king had made a law that he had to pronounce a death warrant at three different times, before it could be executed, in case he might have been over-hasty in the first instant.

The rotan floggers have a certain rank; they are many in number, and each carries his bundle of three to twelve rotan sticks in his hand. These sticks are about three feet long and as thick as a little finger.

He has no real soldiers, only there are some kinds of guards near him, together with his courtiers, specially such as they call pages. They do not allow any stranger to approach him nearer than thirty steps, at which distance everybody must prostrate himself before the king. All people near him must fall down as soon as he stops in his walk, or at whatever place he may choose to be; they may only approach him creeping on their knees, with their hands folded and uplifted, speaking in humble tones.

Whenever he is in his swimming houses nobody may row close past them, nor cross the river; such a crime, according to the laws of the country would be avenged by capital punishment. However two of his pages were guilty of this crime during my stay and they escaped with eighty strokes with the rotan.

Ten christians are on guard in the little fort where he lives during the night; they are intended to represent soldiers. He trusts more to the christians than to anybody else, and they are considered as soldiers of artillery, but they have no weapons, except their chief, who at night has a sword in his hand. They wear a white coarse short shirt, and long blue trousers, some of them wear hats. Most of them are direct bastards of Europeans, or their ancestors were Europeans, but they are as dark as the Indians. They have neither implements for the cannons, nor powder at hand: the only existing powder being either in the quarter of the Christians or in the house of a black Mandarin. They have no granulated powder, neither do they know how to prepare it. The coal for their powder is made from the wood of the *Cerbera Mangas*.

Each of the cannons of this small fortress, stands between four thick beams, which stand perpendicularly and are firmly rammed into the wall; to these beams the gun-carriage is tied with strong cords, so that the cannon cannot kick. This of course is a new impediment for these unpractised people when they want to load the cannon and no side-ways movements are possible.

I busied myself with packing to-day, and directly after dinner the anchors were lifted. I followed the ship in my small boat, and amused myself by going on shore from time to time. I found a kind of *Smilax* with oval-shaped leaves, which I had not seen before, and also the *Waringa rubra*, a kind of fig tree, on the banks of the stream. The water began already to be salt; towards evening we came to the custom station, where the anchors had to be let down.

6.—I rowed again in my boat along the shore, my chief aim being to find a specimen of the *Granatum Littoruem* in bloom*, and I succeeded and found it pretty frequently, also good ripe seed of the *Cesalpinia nuga*, and some other seeds, and moreover fruits from the tree, which I have already described in Tringuemalle; the one which I first thought to be a *Hernandia.*

On my return to the ship I made a description of the abovementioned tree; its wood is considered here to be the best for building purposes.

7.—We sailed out of the harbour and had fine weather and very favourable wind, but we could not obtain a pilot to pass a bank, and therefore we had to cast anchor four English miles from the mouth of the river.

8.—The pilot came on board to-day, but by ill-luck we stranded on a mudbank of about German mile's length, and we were told that we should have to remain there patiently until the next new-moon.

9.—We certainly were settled there beautifully firmly, and as the tide was about one foot lower to-day than yesterday, all attempts to get the ship afloat were useless.

I obtained to day a stem, roots, and a few branches of the *Radix Dei para.* The odour of the fresh root is very sweet and agreeable; the stem had a white-grey rough back; the branches had prickles underneath the leaves. The leaves were like the drawing Rumph gives of them, long in shape. They dried quickly and were hard to the touch, harder than those of the *Gmelina asiatica*, therefore Mr Burmann must have been wrong in what he says, as *Gmelina asiatica* has smooth, fleshy leaves.

11.—However much trouble they took to get us out of the mud, it was all in vain, and moreover by their using strong wind glasses and cast the big anchor, we were in danger of being wrecked on the sandbank lying before us. I obtained some of the soil which had been brought up by the big anchor; it consisted of a grey kind of drifting sand, intermixed with much mica and a little clay, but it had a strong odour of the Bitumen.

12.—This afternoon I took an opportunity to go back to the land, and had the good luck to have favourable wind, so that I reached the custom station about five o'clock, and one hour and a half after that I got another boat, with which I went on to the town this evening. Before sunset I botanized a little and found a peculiar kind of *Contorta.* It climbed, had opposite oval or at times heart-shaped leaves, which were fleshy, smooth, and shiny on the top. The fruit is peculiar; it is of the size of a very big apple and is almost round; at its stalk grows a projecting, sharp, fleshy keel, which runs down almost half the side and grows gradually smaller; outwardly it is covered with a white-grey rather shiny skin, and little sharp projecting dots, which are sharp and irregularly distributed make it rough. Inside it is fleshy and has many (seeds).

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* *Carapa moluccana, L.*

People here eat both the fruit and the leaves in their curries and consider them to have healing qualities. But no aninal can eat this fruit without dying, one has specially observed that as regards pigs; only on the monkeys it does not seem to have any bad effect, because people are said to have observed that they eat the ripe fruits. The fruit is full of an acid milk; the whole description can be found among my description of other plants. I got much ripe seed of the *Phaseolus inebrians.* It grew dark, and nature presented another wonderful spectacle to my eyes. There were millions of phosphorescent *Cantharides*, hanging among the thin branches of the Siamese Lampu, bending as low as the water; they let their phosphorising light shine and disappear in equal periods of time, and this time was so exactly kept that practised soldiers could hardly have kept it more exactly; it was very rare that one of them was out of time. This spectacle could be watched all along the river, further up than there were any houses on its banks.

13.—Early to-day I went again to two temples, which both lie down the Pipli river. To the first of them I went on account of two trees, from which I had only got imperfect blossoms; one of them had blossoms resembling those of the Mangostang, with small lancet-shaped petals; the other one has blossoms like those of the Mangos, with three large petals; both of them however had not much advanced in growth during the last eight days.

From here I went to another temple, to which the king after resorted last year; it had many pictures of different size on the walls and on all pillars. There were two rows of pillars, six in each row. The pictures represented a procession of boats, and many scenes showing the splendour of their kings, their cars, etc. Round about there were niches of about one foot high; they were all in one row and in them were placed gilt figures in sitting postures. The chief idol was only moderate in size; before it stood two other idols, apparently of the female sex. They had ruby rings and other jewels painted on each of their fingers. Above them there hung canopies which were round and had four divisions, one above the other; they were ornamented with flowers and tinsel.

There was another smaller idol, sitting back to back with the chief one; on the wall at the side of two doors were two hieroglyphic boards, the signs being about four inches long and painted in equal rows, representing all sorts of animals, flowers, and leaves. They were said to be copies from originals which exist in Inthea in a temple. They represent the footprints of one of their gods. The whole plates were about three feet long and two feet wide. Others say that they are the tables of their Metempsycoses. I could distinguish an archer, a ram, fishes and such signs, and therefore am more inclined to think that they are the tables of their signs of the Zodiac, because some of the Malabars on our coast have similar tables, and the leaves of the ebony-tree, which they call Karingalli, and which occurred often on those tables, are often mentioned in their poems. In the pronaos I found many *Saraca* trees in full bloom; I was told, that these flowers furnish a good vegetable. I also found the small parasitical *Contorta* with orbicular leaves,* of which Rumph has made a drawing in his third volume. It grew abundantly on a tree, but had neither blossom or fruit. The ordinary mangestang began to bloom.

In the afternoon I started on my way back towards our ship and as the water was very shallow in some places, I went on shore. First near a temple, which lay at some distance from the stream and was called Bang-Plung. Here I found *Averrhoa acida* in full bloom, but most of the blossoms were male ones, and it is no *Overrhoa* but a *Phyllanthus*†. *Cercophyllum arborescens* began to bloom; both its leaves and its blossoms are eaten by the natives. There was a plantation of many young trees here. *Terminalia Catappa* grew everywhere wild on the banks of the river, specially in such places where the water began to be salt.

At other places I found a *Nyctanthes;* it had many branches and lancet-shaped leaves, which were shiny on the upper

* *Dischidia nummularia.*

† *Cicca acidissima.*

side. The *Varinga rubra of* Rumph grew also frequently where the water began to be salt, and my climbing Tetrandria, with three long leaves, I found with beautiful open blossoms and fruits. The common monkeys diverted themselves towards evening with the fruit of the Lampu. They sat on the big branches and drew the thinner ones, which hung into the water, up towards them until they could reach the fruits. The water-hens sought for their supper in the shallow water at sunset. They were of the kind commonly seen on our coast, with a lead-coloured greenish back, white neck and stomach; they have some rust-coloured feathers at their sides. At dark I came to the custom-station called Chanki.

14.— Quite early I left Chanki to get to our ship. I took a boat which was to bring water to the ship, because all our water had been spilt, when we struck the ground. The wind was very strong after we left the river, and large waves came into our boat. After 9 o'clock we happily arrived on board of our ship, and hardly half an hour after, the boat in which I had come split, so that it had to be tied together with ropes. I discovered from what danger I had escaped and thanked God who had saved me from it.

In the evening I went to a place where fish are caught. This is done in the following manner:—For about half a mile two rows of thick split sticks are firmly planted in the ground, so that they meet in a sharp angle. At this point there are again many sticks planted in the ground, which form a square. On these sticks stand two men, one facing the other, tying the front part of the net to a trigger; at the other end there are two men in a boat, who hold up the net, which at the other end has been fastened at the open side of angle formed by the sticks. As soon as it grows dark, they let the front part of the net fall down, while the other end is kept above the water. A very rapid stream which at this point flows into the sea brings the fishes down into the net, which the fishermen raise every three or four minutes. First of all they only caught small Gasterostei, but later in the night, Scombri and other good fish were caught; among them I found one Gasterosteum, which resembled the Western one very much, and is called St. Peter's fish by the Portuguese.

15.—Early this morning I made a description of the Gasterosteum obtained yesterday. In some of these fish I found some Onisci, and some others, especially the St. Peter's fish, had *Oniscus parasiticus* in their mouths.

16.—My occupation was to try and preserve the collection of herbs and seeds. Meanwhile we were agitated both with fear and with hope, as we lay near a sand-bank and the wind grew daily stronger from the north-east.

17.—To-day the water rose higher, because it was near the time of the new moon; the wind was strong from the north-east and we had the great luck to get afloat without any damage. Never is the heart more inclined to give thanks to the protecting Hand of God, than when one has escaped from a pending danger. At least I felt more deeply grateful than I cared to show to the fashionable world. The wind was very strong.

18.—A hired man brought me to-day some branches from the shore; they had oblong leaves, full of nerves and blue blossoms. Some other branches had lancet-shaped leaves, equally full of nerves and rough.

19.—We got to-day again water on board, because when we had struck it had all been poured out, in order to make the ship lighter; also the anchors and ropes, with which they had vainly tried to get us afloat, were sent back.

20.—To-day everything was ready for sailing and we only waited for our captain, who came towards evening and paid the people who had come with him.

21.—In the night, towards three o'clock, we had a favourable wind, whereupon the anchor was weighed and with joy we left the place where we all had experienced so much danger and vexation up to the last hour. We passed quite close by the high hilly islands on our left, where the bird's nests are collected in such quantities, and where now and then they also find black pepper; they were all stony, intermixed with red soil; near the sea the sand seemed to be white. I was told that the best pepper grows on a red clayey soil on a little hill. We saw several boats which had come from Siam, in order to buy pepper from the inhabitants. In the distance we saw the continent, which seemed to be flat, and had only some small mountains. The wind changed and was in the evening north-west. It was rather cold, and there were some clouds, but the whole atmosphere was so misty that we could not see farther than two German miles. In the evening we had calm, which lasted part of the night.

22.—We had calm through the whole night, and only towards 7 o'clock there was a little north-east wind. We passed as near as $\frac{1}{8}$ of a mile by an island, the water being twenty fathoms deep; the shores looked sterile. I fished frequently for *Fucus natans* and *lendigerus*. About two o'clock in the afternoon passed quite close by the island, which is called Cape Liand in the charts. The stratums of earth were distinctly visible, as they descended slantingly from north-east to south-west; they consisted of stony strata resembling a *Cos;* their *(Stalbander)* were probably red and white (bands). Here and there we perceived on the perpendicular walls some fine green plant, which much resembled the *Lycopodium phlegmatitis*. The steep slopes moreover were often covered with light green plants, looking more like moss.

23.—We advanced moderately, and in the afternoon we came to a harbour, where we had some high pointed mountains on the left and a chain of islands on the right; we intended to pass them by closely, but the fathomless depth of the sea forced us to keep to the harbour.

One of the steersmen had gone on shore while measuring the depth of the sea, and the natives brought me many rare things, most of them were however fractured. The most remarkable was a new *Alcyonium.*

24.—I was so lucky to-day as to get the permission to visit one of the islands with the boat belonging to our ship. This island consisted of schistous stones, with many coloured veins, mostly runnin in stripes. Many of them were bright red and porous; now and then I found some sponge-like porous stones of black colour, which no doubt were of volcanic origin. The eastern side had a rather projecting sand shore, consisting mostly of shell sand, intermixed with a few grains of quartz. The sea was filled here with many kinds of coral stones. The most peculiar stones which I found, in a slaty white grey fine sand, was a stone with thin green stripes like malachite, and another piece which resembled the heavy spatum from the Harz-mountains. The most important plants on the sand were: *Fenus musiades*, *Ulva paronia*, and *labyrinthiformis*; both were frequent; *Fucus natans* was rarer; further on there was nothing but *Ginora.* A little deeper inland I saw a plant which had the habit of an Amonum and further I often met a plant without stem, with long oval pointed fibrous leaves, the single stalk of which was angular thin, smooth, and almost longer than the leaves themselves; from the root grew, between two sheathy leaves, a raceme of about one finger long, bearing very fine beautiful blue oval fruits; they had only a thin skin and little flesh over a ball-shaped white kernel

I saw a special kind of fern with a single stipitate ternate pinnate frond, with the pinnœ tripartite striped; also a *Bauhinia*, the leaves of which were perfectly divided, smooth and beautiful; it had no blossom, but I obtained much seed. I also found frequently the *Convolvolus maximus*, *seminibus*, *hirsutis*, *marginibus petiolatis*, *Hermanni minor*, and seed of some other plants. My stay here was only of short duration, two hours at the longest; we had to catch up our ship which was going with full sails. We had to overcome much danger, and succeeded in reaching it after five o'clock in the evening.

25.—To-day we came at last to the mouth of the river which flows past Chantibuhn. We cast anchor in the harbour of this town, between two islands; it was late in the evening. We prepared everything to go on the following morning to the town with our boat. A very big tortoise, which had been caught near one of the is lands was given us to take away with us.

26.—Between three and four o'clock in the morning we went on shore with our boat; none of us had ever seen this country before, and so we went about as chance would lead us. On the right hand the mouth of the river had formed a low back-water; it was stagnant, and the country was overgrown with trees. On the left there was a high stony mountain range, also covered with high trees. We looked about for houses in the dark, but in vain. At the break of day we saw some houses near a bay, which cut deep into the land and on approaching these houses we found them to be the custom houses. The water was not very deep, although at was high tide, and we had to be carried for a considerable distance.

Soon after I went into the forest, which consisted of high trees and only little undergrowth, the soil being a yellow dusty sand. The first plant I found was a climbing kind of cucunber, which I had already found before in Inthea. I frequently found a thorny *Mimosa*, which resembled the *cassia* but had different pods; it had ripe seed but no blossoms. I also saw many plants which were unknown to me, part without blossom and fruit. There were many so-called oil trees* here; they were very high and had splendid stems, but none of them was at present producing any oil. Some of them had two holes hewn into their stem, the lowest one being about of a man's height from the ground, was about one foot broad and was first cut horizontally, but then it sloped a little downwards for about six inches and ended in a half round niche, which was about one and a half feet high. The inside of this hole was only little burnt and at the beginning there was no trace of charcoal, but it was still showing marks of the oil. This tree seemed to have only been burnt once, for the holes of the other trees were much more burnt; nevertheless these trees had just got new foliage and were beautifully green; the leaves were oval, had serrated edges and were striped by the veins; there were neither blossoms nor fruits at this season. I saw a small shrub, hardly one and a half foot high with blossoms and fruits, which I described. It belonged to Mr. Ritter's fifth class. The calyx and corolla were divided into five parts, the anthers grew on the corolla above the division. The seed bud was ball-shaped, the style round, shorter than the anther, the stigma pointed; the fruit was pear-shaped, and was of the size of an ordinary pea. The corolla was white-pink, speckled with yellow. The big trees were swarming over with green caterpillars.

After we had got a man to accompany us up the river we continued our excursion at seven o'clock in the morning. In the beginning the river was very large and full of fathomless depths; both banks were densely covered with trees, which at high tide stand in the water; they were only *Rag. Sophoras*, *Avicennias*, trees, which I have already described at the Bangkok river, also *Lampu* and *Granatus Littoreum*. Now and then it seemed as if the river was about to divide into several arms, but afterwards it grew narrower; the bank was for some time higher, but soon it was swampy again and overgrown with a coarse kind of grass. I saw a kind of *Avicennia*, with white shiny lancet-shaped leaves, and at last towards five o'clock in the afternoon we reached the town, after having alternately sailed and rowed for about four German miles. We went to the Governor of this province and after I had paid my respects, I tried to pass the time until our captain had found suitable quarters, by contemplating the things of nature. The first view which I took at the large fat buffaloes, which were pulling square massive carts was formidable. I could form an idea of the wild buffaloes, living here in the woods. The grazing places, which lay close to the Governor's house, were mostly burnt down, and consisted of a kind of sugar-cane, which grew very high, had broad leaves and a very narrow panicles, and stood about as high as one or one and third men. Mr. Arch v. Linné does not mention this cane.* There was also some *Saccharum diandrum*, which grew also unusually high here, only in the most fertile places grew *Saccharum spontaneum.* Besides these there were few other kinds of grass which I managed to recognise. From the leaves of the first kind they plait here the common mats. Between these high grasses grew some shrubs with simple branches, their leaves were lancet-shaped, rough and a little wavy; they had no blossoms, but many ball-shaped fruits, having five winged edges, and the fruit itself was woolly and larger than a hazelnut. Deeper among the grasses I found some kind of *Hedysarum;* they had fruits but no blossoms. Among them was the *Hedysarum umbellatum;* lastly I found a *Hedysarum ulchellum*, which I only could recognise by the nodding distichous branches with opposite orbicular stiff veined bracts; only here and there I could see a few leaves at the base. I collected much seed from this kind. At last I came to a dense forest. The first plant I saw there was *Laurus cassia*, which had just got fresh leaves, with their spreading panicled-racemes, but hardly had one of the blossoms begun to bloom when it was devoured by innumerable ants; the *selamonic?* ant being the worst among them. There was a *diadelphous* shrub, which as it had support for its branches in those of some other shrub, had climbed up; it had many blossoms, and I have found many other specimens of this same class on our coast; the blossoms resembled the *Pungum* of Rheede, which has been classed by Mr. Zolander among the *Glycines.* I took many of these blossoms with me, as well as specimens of the Lichous and of the Laurels, and went joyfully back to my boat. We rowed on about hundred steps and took up our quarters with a well-to-do Chinese merchant; we learned there to live like the Chinese and did very well. The weather during the last days was fine, only the heat at the foot of the mountains was very great in the afternoon.

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* Dammar trees.

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* Probably *Saccharum arundinaceum, L.*

27.—During the night it was just as cold as it had been hot in the afternoon. There was mist and heavy dew towards morning, which revivified the plants. I should have liked to go out early in the morning, but there were many hindrances, until at last I got hold of a woman, who could speak Portuguese a little; she brought with her a boy who could climb the trees. I went out at about nine o'clock and passed a temple, which stood some fathoms above the sea on a little hill; broad stone steps led up to it. I saw here upon a high tree a parasitic plant; its simple racemes were ear-shaped and as long as a hand is wide; its stalks and blossoms were of the most beautiful carmine colour; the fruit was whitish; some projecting anthers stood out against this beautiful colour. The tree however stood at the side of the steep precipice, and the parasitic plant grew on the outmost branches, and so nobody would undertake to get me some of it. I continued on my excursion and found on the pedestals of the ordinary columns of the temple several ferns. On a stem of more than two men's height I found a peculiar kind of pepper with oblong leaves. I hastened to penetrate deeper inland and found many things unknown to me. A peculiar kind of *Nyctanthes* was in blossom, and a *Panicum* with a long panicle, which however was so rough that the branches intertwined. I also saw a peculiar kind of *Ruellia*, with large blue blossoms, climbing among the shrubs. My real wish was to find the Cambogia gutta tree, which grows here frequently and also the L. A. both of which my guide promised to show me. We hurried to a temple, which she said was the nearest place where both the much desired plants grew, but when we arrived there everything was wrong, and the people said that they grew half a day's journey further, near another temple situated near Eben. This news disappointed me very much, because it was by this time already midday, and my departure had been fixed for the morrow; so I went to a big forest lying near, though they all dissuaded me on account of the wild animals living there, as tigers and rhinoceros, but I ventured to advance about 500 steps; first there was very dense and thorny underwood, but a narrow footpath helped me on. Most of the trees were unknown to me; a plant which I recognised as belonging to the Monandria, grew very often in these woods. As my guide and the other people accompanied me, I grew more daring and I advanced still further; but the deeper I penetrated into the woods, the more often I found this plant. I rubbed the leaves, and found them to have a strong smell of Cardomum. I showed it to the people, who assured me that it was Cardomum, of which two different sorts grow here. None of the natives are allowed to sell any of it to strangers, who pay them well for it. All had to be delivered to the king, who paid very little for it. Lastly I found some capsules on the ground, which were overgrown with small fibres. The plant which produces them consists only of one stem growing up slantingly, curving slightly at the end; it was not as tall as a man. The roots are horizontal, have knots in rings, and are a little raised and as thick as a finger, like those of the ginger. The stalk is round and had on both sides distichous alternate widely spreading leaves, oblong, acute, the upper surface smooth, the lower glabrous whitish. The real time of blossom was in November, the fruits are gathered in December.

My curiosity urged me on. I found the *Cassia lignea* and *Cardomum*, but I was still very far from the mountains, which Mr. Toren mentions in reference to the thunder in the Cardomum mountains.

I had the good luck to shoot a Siamese cuckoo in this wood. It had its two long tail feathers, and I saw several birds of this kind here; they were all of a shiny black colour. The inner side of the wings had small white spots as large as an ordinary pea, and there were also some white speckled feathers on the rump, but all the rest was pitchblack. They were busy catching insects. Some Talapoins came after me and warned me not to penetrate deeper into the woods, so I re-collected my flora as much as was possible in a hurry, and went home with many new things. In the afternoon I went to a black pepper plantation, which the Chinese have made a quarter of a mile from the town. The pepper plants are planted in the ground, and trained up dry stems of trees about the height of three men; they stood four steps distant from each other. Little ditches of hardly a foot deep had been made between the stems in order to moisten the roots. The plants were now full of almost ripe fruit, some were already being dried on mats. The king had ordered 80,000 piculs to be brought to his capital from this Drago, and there were two vehicles standing ready to take them. A pigeon of the size of a chicken was shot. It was dark green on the back, and its stomach was whitish-green, the feet and bill were ash-coloured.

I saw the *Gramen arguens* of Rumph in a wilderness, but it was almost dry; also some plants without leaves or blossoms, of which I only obtained some seed. The trees were everywhere filled with green pigeons and other birds, specially with the *Gracula calva and cristatella*, which were feasting on the nectar of the *Erythrina corallodendron.*

28.—We prepared everything for our departure to day, but to my great pleasure we stayed on. I had sent a fellow for the blossoms of the *Cambogia*: I paid him in the hope that he would keep his promise, and was delighted that the time would be long enough to await his return. I went to another part of the wood, where I found a peculiar *Loranthus* growing on a small tree; I took several specimens with me. I also saw a Dracena in blossom, but it had no fruit. To-day I was not as lucky as yesterday in hitting upon a very rich part of the country, as near the mountains everything was burnt. I found many places where the wild elephants have their track to the water. I went back and paid a visit to the Roman Catholic priest, Jacobo Philippo de St. Corol, in order to make some inquiries regarding the country. He had really been born in Macao, of Cochin-Chinese parents, had acquired his theology in Manila, and had been sent to Cochin-China. In the many civil wars and revolts of the country he had lost everything. He was taken prisoner and expected his death at every moment; afterwards he had an opportunity of escape and was for the time set over the congregation here, which consisted of about 250 Christians. My curiosity regarding the products of this country directed my questions. I was pleased to learn that there are two different kinds of Cardomum here, one of them being round and smooth and the other more oblong and overgrown with fibre; the former kind grew a little more inland, the latter was very common in all the woods of the country. The *Gummi Gutta* was much collected by the people of the country. The tree was very common; it had a high stem and oblong leaves. The red sandal-wood was frequent in these mountains; in the house of a Chinese I saw a large beam of it being split. The yellow sandal-wood grew frequently in the valleys, but was called rose-wood by him; but from one branch which one of his pupils brought me, I saw that it was the same as that which on our coast is called white sandal-wood, only it grows smaller and has thinner stems, while on the coast of Malabar it has thick stems and turns yellow and oily; it is the *Lignum Santalum Citrinum officinale*. According to what the priest said this wood here has lighter and darker veins. He had just the day before ordered a stem to be cut, but it had not yet been brought to his house.

There was some black ebony wood here, but it was not called so in this country. He also spoke of a kind of oil, used for a varnish, and in his language he called the tree Rock. He says the branches are broken off this tree and from those places issues a milky juice, which burns very badly when brought in contact with the skin, but which soon, when exposed to the sun, changes into a kind of oil, which is used for painting purposes. The real so-called Chinese varnish tree did not grow here, but in the kingdom of Cambodia. The resin-trees were everywhere very common in the wilderness, and furnished the means of living to many poor people. He also said that agall ochum *(Gharu agallocha)* grew pretty frequent in these mountains. It is a twisting tree, which makes many curious bends in its growth; at this time of the year it was dry and had no leaves at all. In the end of February and in March the oblong leaves being to come out, as there is some rain in these parts during those months. Very soon the small white blossoms come forth; they are divided and red at the end, and they are followed by a fruit, which ripens in the month of July or August, is about as large as a thumb, and has a sweet agreeable taste—a reason why the natives often eat it. The stem when perfectly sound does not furnish this valuable wood, or at least not the kind so much sought after in trade, but the birds, which come to pick at the fruits, break the branches and in those place a kind of blight is thus originated, the plant begins to sicken and the sap is irregularly distributed, so that there is more in some places, whence it grows resinous. The tree dies, and the ants gnaw the loose much putrified wood and build their nests in it. Probably these insects must at the same time find their nourishment in this way, because they occur in great numbers and remain there even when the wood has already been brought into trade. They are the black, small, long-legged ants, so common in India. The more a part has been permeated by the black resinous wood, the more aromatic and heavier it grows, and they have three or four different qualities, which fetch very different prices. The first is black-brown, shiny, hard, and dry; it has an agreeable perfume, even without being burnt.

The second quality has now and then little white spots; it is not as heavy, smooth, shiny, with a fine grain, and suffused with resinous sap.

The third quality has only very little resinous matter, which can be cut out with the knife, for what the ants and the putrefaction do not consume, is generally cut out with knives.

The fourth quality is a brown, light fibrous wood; it really being in its natural condition. This is not exported but used in Siam for ordinary fumigating purposes. Every poor Cochin-chinese Christian must pay a tribute to the king, consisting in two katties of the first quality wood. Whatever more they find they may sell. For this purpose these poor people must go into the wilderness of the mountains in the months of February and March, and search there for this wood. The Siamese call it May-kisna. There is still a better quality, which they called Calampack, but this is not to be found here. The first quality is sold here for six tekal, and the second for four and a half, or at the highest five, of the same coin; if some merchants trading on these coasts give them goods for it, they reckon 100 per cent higher on his goods, from which fact one may see how great the gain is and how anxious they always are to get people to witness such bargains. The king of Siam takes twenty for each two, and the Siamese weight is here in use. The king very seldom sells the first quality, but generally the second. Whatever is produced of Gummi Gutta has to be delivered to the king like the Cardomum, and he sends it away or sells it to the Siamese, or he sends it to Batavia on his ships, to be sold there. The elephants and elephant tusks are also brought to the capital. The horns of the rhinoceros, which are usually shot here in the evening, are delivered to the king, who pays very little for them; the flesh is said to be bought for food by the Cochin-Chinese.

28.—I had to pack up my things early this morning and before leaving this excellent country I wanted to give nature one last visit. I first went to the woman who could speak Portuguese and had promised to procure me the roots of the *Plumbago Cocci-*

nea for payment, because the other, which I had taken with me from Bangkok, was already dead. She considered it here as an abortient. I saw a peculiar kind of *Bignonia*, with long flat pods full of knots. I desired very much to obtain ripe seed, or if possible some of its blossoms, and I succeeded. In a little wood before the town I saw different kinds of seeds which I had not seen before. There were especially high trees, two different kinds of *Lagerströmias*, and at the same time I found a few blossoms. The bark of this tree was white, the leaves oblong and large; the other kind was smaller, with a darker bark and had capsules of an oval-shape. I saw a shrub in this wood with oblong stiff leaves without any fibre. Scarcely did I touch the little tree when a strong spicy smell of clover and cinnamon spread all round. I did not get any blossoms, because I was in a great hurry and so I took two almost ripe fruits and a few specimens of leaves, and went back glad of what I had found. Soon after I started for the ship in a hired boat. Before leaving I called again on the Roman Catholic priest, who promised to provide me in the course of the year with fruits and blossoms of the eagle wood and with the Gummi Gutta; at the same time he gave me two little pots filled with earth, in which scented plants had been planted.

N. B. The town of Chanthebuhn lies on a river, which the inhabitants call May-Nam, which is hardly 200 steps wide. The houses are built on the banks in the same manner as those of Bangkok. On the right towards the east is the part where the Siamese live, and on the left, the quarter of the Chinese; the houses of the latter are generally better and built of wood, while those of the others only consist of bamboo and Nipa palm-leaves. There were not more than about 200 houses altogether. The Cochin-Chinese, who are mostly Christians, live about 400 steps from the town, also on the banks of the river. The people all live very poorly, or are forced to do so by the tyranny of the government. There are few merchants or artisans here, but many servants of the king, who always jealously watch each other. The products of the country are not sufficiently utilised, because encouragement is wanting and no one knows how long he may possess the little he has. Frequent examples are constantly before their eyes, viz: The dragging away of all Cochin-Chinese who have lived there; the manner in which a Siamese, who was rather wealthy, had been treated merely because he had asked for the permission to go to Bangkok, etc.

The chief products are: Rice, pepper, elephant tusks, lign aloes, gutta, cardomums, very good building wood, rhinoceros horns, white, yellow and red sandal wood and ebony, and how much more would be produced under a better government. There is an abundance of domestic animals that thrive here. No kind of manufactory exists here, and no foreign trade is allowed; everything must be brought to Bangkok, and all the products of the land must be sent thither.

On my journey I went out on shore several times to increase my Siamese Chloris. I found the large *Malestoma* with blossoms and fruits, but the place was very dangerous, because many tracks of elephants led down to the river. At another place I found the small, very pretty balm tree, which I described. I found male and female blossoms on a tree in separate panicles. Therefore it must be a *Monœcia hexandria trigynia.* The panicles in this species were compact. The calyx was a one-leaved urceole and in the female blossoms it was more distinctly and unevenly serrated; the fruit I have not seen as yet, but it is said to fall often to the ground here as well as in Junk Zeylon, and is eaten. I made my description as detailed as possible.

I saw an *Avicennia* with lancet-shaped leaves growing in the stream where the water began to be salt; it was a high tree.

At the mouth of the river I found a small *Monoccolum polyphemum* in the mud, and on the high projecting point of land I found some new plants at the foot of a mountain, which will surely keep the remembrance of this place fresh in my mind. The sun was setting at the horizon and I had still a quarter of a mile of sea to cross before reaching the ship. I arrived there happily at seven o'clock and anchors were still weighed the same evening, and we started for the sea.

29.—We had little wind. The mountains of Chantibuhn still excited the wish in me to be able to pay them a longer visit.

31.—We often saw the purple blue helix, many cliones, and the *Medusa porphirta* swimming past; also a brown sea-snake, which I tried to catch.

February 2-3.—In these days we faced the island of Pullu Wai. A feeble and contrary wind forced us to remain in this neighbourhood.

4-5.—During the night we had approached the two islands of Pullu Wai lying close to each other as near as a quarter of a mile. The sea was filled with the blue snails. They keep above the water by means of a cellulous long flat air bladder, which is many times larger than their thin shell, at the same time they stretch out their two feelers, with which they probably seize their food. There is a large slimy bladder inside the animal, containing a beautiful purple-blue, thick fluid. The first-mentioned white bladder and the *Medusa porphita*, with their white plate-shaped body, gave the appearance to the sea of being speckled with white. I did not see the swimming Tritons, which I had seen here so often last October, and also the different kinds of Cliones were not so frequent, although I caught some of them, especially the Concatenata, which I dried. I also saw the the mollusc of sapphire golden colour, but some feet below the surface of the water, so that I could not reach it.

In the afternoon we had so much wind, that we could leave the neighbourhood of these islands, which with their magnificently green trees had been very pleasant to the eye. In the south-east at some distance from these islands some rugged rocks could be seen.

A *Pelican aquila* (frigate bird) was caught yesterday: I stuffed if to-day. Mr. Itatius Müller is wrong in the description of the beak, which Mr. Osbeck describes better. Mine had a brown head; neck, back, wings, tail, stomach, and half of the chest were also brown; the lower part of the wings was silvery white. The iris of the eye was straw-coloured, but I saw one to-day which was also brown underneath, and had only a lighter line across the chest.

In these days the water of the sea was turbid and some white woolly substance was floating in the water.

6.—To-day we saw Pullu Pensang before us: we were still at a great distance from it.

7.—Already yesterday we saw Pullu Pensang: to-day we had approached it within two miles distance, at the north-western side. From here we took our course to East-South-East, and in the afternoon we thought we were near Pullu Ubi because we saw a great number of birds hover over one place. The sea was very wild: the waves were rolling in a south-eastern direction. Our captain, who had often made this journey, told us that there was a strong storm from the north-east raging in the Chinese sea, only the waves were broken by passing through fathomless depths, which from Cambodia stretch far into the sea. To this circumstance the changing course of the waves was also due. We were to-day between the eighth and seventh degree.

In the afternoon we had strong wind from the north-east, which generally comes from the south-east, like the waves, and it only assumes any other direction passing the Cambodian mountains if there is a strong storm from the north-east raging in China.

The air looked very stormy and we had some fine rain-showers.

8.—The north-east wind, which had sprung up yesterday, increased during the night, and the further we came from the land, which of course we did on account of our course being to East-South-East, the more it increased in violence and the higher grew the waves. We heard several things being broken and some of the sails being torn. The changeable dull weather, combined with small showers, continued and all port-holes and windows had to be closed. The terrible night began, and we were quite uncertain of what our fate would be, because our ship was old and the north-east wind seemed to split the upper part of the vessel on one side. Towards three o'clock we met a big ship, which seemed to have lost its upper masts; its course was towards South-South-East, but we kept to the course which we had taken. In the evening after sunset the wind calmed down a little, which renewed our hopes, but the sea was very high all during the night, and the atmosphere was dull and rainy.

9.—The wind continued from the same quarters as yesterday, but was not so strong; the showers were strong and calmed the waves; it continued to rain all through the day and the sea, which had been filled with foam had cast them off after the storm. Yesterday morning I could still see some of the masses of foam rolled conically together, but to-day I did not discover any trace of them.

10.—Early to-day the rain continued until about nine o'clock. The wind was more favourable, as we directed our course to the North-East and at times to the South. It was disagreeably cold for this climate. After noon we rejoiced greatly, when just in front of us Pullu Simon was discovered, whereto we directed the course of our ship. In the evening before sunset we saw Pullu Timon, and that it consisted of high mountains; we sailed quite close to it.

The water was filled with red swimming objects, which in some places covered it entirely. The sailors call it fish-spawn in the English language. Some birds from the land passed our ship and a tern was caught. The atmosphere continued to be cool, but it was dry.

11.—Early this morning we had approached Pullu Aor as near as half a mile. The high mountains have no trees and our captain, who had cast anchors here last year, told us that it was inhabited by many very poor people.

Some amber* and birds' nests are collected here, and many coconuts grow on the island. The inhabitants make a very good kind of mat. They venture far out on the sea, even in stormy weather, in their small but specially well-built canoes. I was not so lucky as to be able to go on land.

I gathered much of the so-called fish-spawn, as the sea was calmer and we had fine weather. As soon as it was taken from the sea it lost its red or ochreous colour and turned grey. It consists of small oblong roundish pieces, pointed at both ends; they are hardly more than two lines long and half a line large. Under a half-inch magnifying glass, one sees that they are composed of innumerable fine fibres, many of them being green. If one touches them with a knife or a finger, they are like the finest mud and slimy. I kept some of them in spirits of wine. They became a little smaller and green, which colour they also communicated to the spirit. Those pieces which had struck to the glass, had turned black. It seems to me that they are nothing else than those foam-like particles, which we saw a few days ago floating on the sea, and which have been driven together to their present shape, by the fury of the storm. Probably they sink down to the ground, when they have been thoroughly saturated with the salt of the sea. Another idea is that they may be the swimming seed of the green strong Conferva, which clings to the rocks and the ship, and can resist the strongest waves. It is quite certain than they are organic particles, as far as I could discover.

We had north-easterly winds and the sky was covered with clouds; towards evening we had some lightning of a brilliant red colour in the direction where we supposed the peninsula of Malacca to be. After eight o'clock the anchors were cast in twenty fathoms of water, and the very favourable wind was not used for our journey.

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* Damar.

12.—We passed the morning in exploring the island from our ship, and discovered several mountains. About seven o'clock the anchors were weighed and soon after we passed the island Bintang. There were two conical mountains on it, the one farthest inland being the highest, it has a divided summit, and could both be seen from very far. The rest of the island seemed to be flat; on our right we had the Malay coast; its shores are high and hilly, among these hills is the Barbuset, a mountain of medium height, which the sailors take as a mark. We had the good luck to pass the rock Pedro blanco with favourable wind about three o'clock. This rock which rises from the sea on the Bintang coast is remarkable, as its side declining towards the west is white, while the steep sides were red, probably on account of the breaking waves. The stones looked like a mixture of felspar and quartz. This rock is very useful for those who pass the Strait of Malacca, specially when coming from India, because it is said that the depth of the water in front of it is about 30 fathoms. At the back there were many small pieces of stones showing above the water, being of black colour,

We were here close to Bintang, and saw that this country produced hardly enough rice to keep the inhabitants, but there was much sago planted. The king of the island has his residence in Rio, a place on this island; he also possesses some land on the coast of Malacca; amongst these possessions Javar is the place best known, because much tin is melted there. Now the Europeans avoid this place, because the crew of some ships have been murdered and the ships were taken away. It has become a real retreat for robbers since the fall of the government formerly established there. So the present possessor, the king of Rio, orders all produce, as sago and tin, to be brought to his residence, and the Europeans fetch it from there, exchanging products from the coasts of Coromandel, Bengal, and Suratte, etc., for them, at the same time enjoying pretty good security for their lives. We left this coast and crossed over to the Malay coast, to the point Romania, I do not know the origin of this name and from what I saw I could not be sure whether the name indicated the seven land points or seven smaller islands, which lay near one of these points of land, the number of them being however very difficult to fix. Whether the Roman Catholic Portuguese held them to be seven in number I cannot decide here. The soil of all these islands was red and wherever there were no shells, the sand was of the same colour. The foliage of the trees growing on them was of a very dark green. We were hardly one German mile from the shore. After having passed almost all the cliffy points of land the anchors were cast.

13.—The anchors were weighed in the morning, and we passed the dangerous place where the current is very violent, sometimes more than two miles in one hour, the passage being very narrow on account of rocks underneath the water; this is near the island of St. John. This part of our journey was very pleasant, as we passed by many islands which were only separated by narrow canals; part of the shore of a long-stretched high island had broken right away, and the bright red soil showed up brilliantly in the clear morning. But the pleasure of sailing past these islands was only of short duration, only till about 10 o'clock. At that time a strong contrary wind arose from the west, with a cloudy atmosphere and strong rain; when it ceased we had to sail a long way back before we came to a place where we could cast the anchors. The atmosphere continued to be cloudy till the evening. We had taken a pilot with us from Cochin-China; he was a Portuguese and did not seem to know the water of these parts very well. In the evening we saw four ships in one line entering the Strait, and casting anchors where we had been yesterday. The sea when seen from this calm place offered a terrible spectacle, the darkest clouds towered above and we could surmise the height of the waves outside by the rolling of the water. We could not make out what ships those four were which had entered the Strait, they seemed to be large and they all let down their anchors at a signal given by the firing of a cannon.

There was a weak but favourable wind. We made up for what we had lost in the morning, and towards 8 o'clock the anchor was cast again.

14.—Early this morning, at four o'clock, the anchor was weighed, and about seven o'clock we passed the narrow passage near St. John, where the rapidly flowing waters from innumerable eddies, which gave quite an unusual appearance to the surface of the sea. After eight o'clock we passed another narrow passage, which is called Rabbits and Coney. After that we passed a long narrow island, which is called the Carren island. We took this course in order to avoid some fathomless depths, specially those near an island which is called Three island. It scarcely shows above the water and consists of rocks and sand; on it grow three small trees apart from each other, by which the island is distinguished. There were some trees growing in the shape of an arbour on one of the red islands.

14.—The wind and current were both favourable, so that we passed the Cormans (Carimons?) in the afternoon; the Dutch call them the Cardamums on account of the Cardamum growing wild upon them. Near the point of land Tanjang Bolus lay two small Dutch cruisers and a small English vessel at anchor. We wanted to get some information as to the circumstances of war on the Coromandel coast, and therefore sailed close to them, but our friend did not show any inclination to talk to us and the wind was too favourable to cast anchor, therefore we continued our journey. In the evening we passed the so-called Pullu Pisangs. During the night we had complete calm.

15.—With weak wind we sailed along the coast and came near to a high mountain, the Mount Formosa. At nine o'clock we saw a Brigantine before us, which we deemed to be a ship coming from Bengal. About ten o'clock they fired a cannon and hoisted a French flag. A few minutes after they fired a shot loaded with cartridges on to our ship, which however did not reach us, and again a few minutes after they sent a ball, which however passed the ship without any harm. We had not expected such doubtful compliments but two of our cannons were shortly loaded with balls and fired off on our opponent, at the same time the English flag was hoisted. After that we got two more cannons ready. The engagement lasted on, and we shot their flagstaff down twice, and in the end their flag was torn by one of our balls; some of our balls also went through their sails. At last they tried to come up to our stern and to board there, but luckily for us, two of our best cannons were placed there, with which they were most heartily welcomed. This made them decide upon retreating and only from time to time they fired a shot, which however was always doubly answered from our side. About one o'clock the former calm changed into favourable wind, and as we had until now been sideways in the current to follow it, we turned now to continue our journey. The enemy took the same way and had the wind in his favour, but we prepared to give him a hearty welcome if he were desirous of one; a few moments later he turned away from us and sailed in the direction from which we had come, whilst we sailed on to the place whither we were bound.

About three o'clock this pirate had disappeared, but we heard a cannon shot fired, possibly in honour of one of their officers being killed in the encounter, whom they buried in the sea, but this was only a surmise on our part. Only a few balls had struck our ship in the watergang (water line) and had caused little damage. Most of his shots had struck the deck, between the middle and hind mast and also on to the helm and watergang of the ship. We do not know how many shots were fired on us, because at first there were many at the same time; we had fired about eighty shots. A remarkable thing was that our captain could distinctly see through a telescope, that after the first sharp shots had been exchanged, a Roman Catholic priest blessed the whole crew, who received this blessing with bent heads and folded hands.

We passed the Strait during the night.

16.—Towards noon we cast anchor in the harbour of Malacca, and shortly after we went on shore, because we needed a recreation after so many adversities.

17.—To-day I looked about in the town, and found some people who could show me about in the gardens and the neighbouring country. I happily had an introduction to Mr. Abraham de Went, who is a brother of the late gentleman of whose strange ways and love for natural history I had heard very much. This Mr. de Went promised to send me some of his people.

In the churchyard of the town, which was open to-day on account of a funeral, I found frequently *Justicia fastuosa* and *Cassia alata*, and also *Acrostichum nummularifolium* and *Polypodium lauceolatum*.

At the town-chemist's I found the small *Contorta* with the juicy orbicular leaves; it had many blossoms, which I described to-day.

18, 19, 20, 21.—During these days I visited all the gardens where any sago-trees were growing, in order to study them very minutely. Many trees had only begun to bloom, while others had already ripe fruits, which however are quite useless. The leaves of the young trees resemble those of the coco tree very much, but at the first glance one sees that they are much longer. The sheath at the principal stalk of the leaf is only a thin leathery skin, and there is not the same kind of fibre as in those of the coco tree; the stalk is not so thick in proportion either. Moreover, this stalk is concave on the lower side, smooth and shiny, the back is concave, and has generally a brown stripe running down its whole length.

The divided leaves also resemble those of the coco tree, but about a foot or more from their end there grow some prickles on the nerve of the leaf, which are turned back. The nerve itself ends in a three-cornered sharp point. Their colour is dark green. The stem is twice as thick as that of the coco tree and nearly as tall.

[*Then follows a minute description of the tree which is unnecessary to insert.*]

Such a tree is said to reach its perfection in ten years time, when it is planted in suitable soil, that is to say damp and rich soil. When the branches that bear the blossoms and fruits have come forth the tree is cut down and from its mealy marrow the sago is made. A good tree yields sometimes five to five and a half piculs of sago; this however must be a rare case, because in most of the gardens which I visited they told me that those trees would only yield three or four piculs, and also that the trees were twenty years old. Each tree only blossoms once and then dies, but it leaves many young shoots from the root, which can be transplanted; they however seldom grow well, but most of them die. One does not deem sago to be as wholesome in these countries as it is considered abroad.

The Governor von Schillingen, who for several years had been in Amboina, assured me that only utter need forced the poor living there to eat sago. Whoever was rich enough to buy rice, which must be imported as it does not grow there, would never be induced to touch sago; he also said that the health of those who are obliged always to eat sago is not very strong.

The variety which I saw in Malacca was the fourth variety of Mr. Rumph, in his Herb. Amboin (page 76, No 4). It is the kind from which much of the exported sago is taken in Jakor.*

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* (?) Johore.

I also saw the Sagonwahr * tree frequently; from it sago is also obtained, which is said to be even better, but it only yields small quantities. The tree is mostly used to extract from it the common toddy, which beverage is only obtained from the longest stalks of the male blossoms.

The stem is thinner than that of the coco tree and not as high and is from the root to the crown covered with the sheaths of dead leaves, which in this specimen are more of an oblong shape; underneath the crown there is a tissue of sheaths which are not quite dead yet, representing the aspect of burnt hair, they are of a red-black colour. From these sheaths strong ropes are made. Between this hairy tissue stand some prickles, which are about three feet long with sharp corners, and about eight lines thick, horny, and standing in a slantingly erect position. They are used instead of pens by the Malays.

The real botanical description I made afterwards, in accordance with Mr. v. Linne's system. It agrees with *Caryota* in Rumph, Herb Amboin, the first part from page 54 to 64 is an explicit description, and Tab. 13 of the same drawing (is correct), but the small leaves in the drawing are wrong, because they are all torn at the ends and not pointed.† The bundles of fruit are probably only drawn few in number for the sake of distinctness, because their number amounts to more than 100 in every bunch, male as well as female blossoms, which grow on one tree but in separate bundles, only the male blossoms always hang downwards. The remaining sheaths of these trees furnish gardens for many parasitical plants, which in some cases covered the whole stem. The crowns of these trees are generally more erect and thinner or do not contain so many leaves, which however are longer than those of the coco trees.

There were a few Cycas trees growing here, but they were only about two feet high, and looked very weak in comparison to those which I had seen growing wild near Madras and Ceylon.

I also saw another kind of palm here,‡ first in the garden of a Malay, but afterwards frequently near the mountains. It is very much like the areca; although I could not find any male blossoms, I found the fruit to be like the areca nut; it was perfectly round, of the size of a cherry, and contained some fleshy matter, but nothing of a fibrous character like the common areca.

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* Kabong Palm. *Arenga Saccharifera*, Lab.

† Koenig is wrong here in comparing these two very distinct palms.

‡ Nibong, *Oncosperma tigillaria.*

The stem was a little thicker, very straight and high. Below at the stem and underneath the crown it was closely overgrown with thorns, standing out horizontally. The rings of the stem were like those of the areca tree, the colour was darker, the leaves were more like those of the coco tree, but they were prickly at the back.

It is the useful tree which furnishes the wood for the light articles made on our coast, which are commonly supposed by the sailors to be made out of the areca tree. They sometimes grow together in groups. The Dutch people call them Landohsen, and from their sheaths, which are leathery and faintly striped, small vessels are made for the purpose of drawing water; they are light and convenient.

[Here ends the first part of Vol. 2.]

Continuation Vol. 13, from Page 43.

FEBRUARY 15.—We had the rencontre with the French ship.

16.—We arrived in Malacca.

21.—To-day was Sunday; I went to church and dined with the Governor.

22.—I went for a drive with the Com. v. Schillingen and saw the place where the Gatta kamber is made.

23.—Tuesday; I made some experiments with the Malacca water.

24.—We were told to go on board, but after all we did not, nevertheless I could not make any excursion further inland. I saw the house of a rich Chinese.

25.—The same order was given. I botanized near the town; towards 9 o'clock we had such violent rain that I was soaked, and returned at 1 o'clock.

26.—Thursday. The order to go on board was said to be meant seriously to-day. and so this day was again spoiled for me. I took leave of my friends.

27.—We went on board after breakfast, and afterwards set out in a small boat for the red island.

In the evening the anchor was weighed.

28.—We passed Cape Rachado.

MARCH 1.—We passed the Porceler Mountain.

2.—We entered the Strait of Callang. (Klang)

3.—We left it again.

4.—We came Sallangor early. (Selangor)

5.—We stayed there.

6.—We left it.

7.—We sailed with contrary wind along the coast. A silverfish was caught.

8-9.—We only advanced very little. The ninth was a Sunday; we could distinctly see the Zambelangs. (Pulau Sembilan.)

10.—Monday; the wind continued to be contrary; we approached the Samblone (Pulau Sembilan) and Pullu Java.

11—Strong lightning during the night and some favourable wind; we passed the Samplans and Dindis (Dindings) and in the evening we came to Pullu Pehra (Perak). *Alcyonium Spirale* was drawn up by the sounding-lead; it was fleshy and ochre yellow; the animals were small red dots. We saw Pullu Pinang in the distance.

12.—We came to Pullu Pinang. At sunset the whole sky looked yellow, and one cloud specially seemed to have large round holes. During the night we had strong showers and lightning sometimes; it seemed as if fire were being poured down from the sky.

13.—We were still near Pullu Pinang, quite close to the south-western side, which forms a semi-circle and has high mountains. Towards evening we had the same phenomenon as yesterday, only the heavy thunderstorm combined with torrents of rain began earlier in the night, and there was less wind.

14.—Early this morning we passed at last Pullu Pinang, but the atmosphere was still misty and the wind was contrary, so that we advanced but slowly. In the evening we saw Pullu Lada straight in front of us, and on the left we had the high mountains of old Kador. In the evening we had again violent rain and lightning.

15.—The air was very (missing in M. S.). We had all the time wished for some north east wind, but to our regret our wish was fulfilled to-day, because as the captian wished to cruise between the islands, this wind was contrary for us; he had taken this course in order to arrive the sooner in Junk Zeylon. The wind remained North-East; on other days we only had had it for a short time and towards the afternoon it had generally changed to north west, driving the clouds against the high mountains of the islands and against those of the continent, which circumstance always produced strong thunderstorms in the evening.

In the afternoon we were quite close to the three small islands called Pullu Payer, which lie close to the harbour of new Queda. The ship went near the coast of Queda, and at eight in the evening we were so close to it that we could distinctly see the low shore. The sea-water looked white and sparkling; we had only half a fathom of water. The waves round the ship were very phosphorescent, which made us hope for east wind.

16.—All during last night we had travelled along the coast, and at day-break we passed the harbour of Queda, where we only saw one big English ship at anchor, which had been our companion from Salangor, and which we had lost sight of a few days ago. They had cast their anchors here to buy provisions, which could be done here very easily, and then they followed us to Junk Zeylon.

At sunrise we passed a mountain called the Elephant, on account of its resemblance to this animal. It is a medium high mountain, overgrown with trees, and is situated in a plain. The wind was favourable for us to-day and we also had fine weather, therefore we advanced quickly in the channel, which lies between the islands Pullu Lada, Cancag and Trottim (Terntan). The channel in most places is between two and three German miles wide, and several miles long.

We kept close to the above-mentioned island, because the water is deepest at their sides. The continent, specially at the entrance of the channel, had high mountains, which stretched along the coast for a considerable distance, and seemed to get gradually lower; there were many small islands lying near the continent. The above-mentioned islands stretched from south-east to south-west, but they were frequently intersected by mountains and valleys, and the further we advanced in the channel the more intersected they did grow; some of the mountains having the shape of pillars, which of course looked very peculiar. The whole formation resembled the volcanic formations of Iceland very much. The highest mountains were near the coast, but they were all covered with trees. In some places the mountains had perpendicular slopes, which were quite covered with a white shiny substance, probably some matter which had been dissolved by the rain and ran down; at times describing a zigzag. We saw a very nice Malay ship; they are called Prohs; it was sailing between the islands. It was supposed to belong to the renters of the bird's nests, and was either there to collect them, or to guard them from any one else collecting them.

After it had grown dark, the anchor was cast, because we were in the mouth of the channel, where it grows very narrow, and there were several islands to be passed as well, so it was not advisable to advance any further in the darkness.

17.—At 4 o'clock the anchor was weighed: we had favourable wind and soon left the mouth of the channel. We then passed many cliffs which stood high out above the water and also a few islands. The rocks were of a peculiar shape; some were only high, steep square blocks, others had the shape of pillars, others again stretched in long rows from east to west, and they had obtuse points, which looked like carved work. Their colour was red, from time to time striped with white; this was either caused by their being injured by the influence of the weather or by the excrements of the birds.

About midday we passed a very narrow strait between two small islands: at one side the steep rocks were red and I could distinguish the strata, which resembled the red rock felspar very much. There was a deep horizontal cave in another rock, about one man's height above the water, from which bird's nests are collected.

We also saw a Malay Proh or ship sailing towards these islands. Towards evening the clouds gathered very threateningly in the north, and at 5 o'clock the anchor was cast in twenty fathoms of water, and the small islands, the Three Brothers, lay before us at a distance of four German miles.

The sailors caught some silver Catfish, which is often fished for here, but several of them had already paid for this luxury with gastric fever, which had to be cured with tartar-emetic and a special diet.

18.—In the morning the atmosphere was misty: we had a storm and some rain, therefore the anchor was not weighed until 5 o'clock. At 10 o'clock we passed the Three Brothers and at midday the four so-called rocks on our left and Pullu Lontar on the right. The latter is a mountainous island, bigger than those on our left, which consisted of the same kind of cliffs as I have described yesterday. After that we saw the birds' islands: there were many of them, and they consisted almost only of rocks.

After six o'clock the anchor was cast again before the strait situated between two particularly steep birds' islands, which are in fact only steep rocks.

19.—Before day-break the anchor was weighed again, but though the wind came from the land it changed and was not very strong, therefore it was later than nine o'clock before we passed between the rocks, which were very steep on both sides and formed a semicircle. They were not thick at all. The stone seemed to be a very fine kind and in many places the water had deeply undermined them: only at one side I saw some granite projecting into the sea, which seems to form the base for all the other stones. They varied in colour, they were more or less black, at times even red, and as I was scarcely fifty paces from these rocks they seemed to me to be very much like the *Lapis Ollaris*. The slopes of these steep rocks were in most places overgrown with small pendulous parasitical plants; my curiosity was very much excited, but it may be that they were only *Epidenra* or *Lycopodia*, probably *L. Phlegmaria*, because I saw many light green twigs hanging down in bundles.

Afterwards we passed a very pleasant-looking island, Pullu Pausang, and straight before us in a narrow strait we saw many differently shaped rocks, projecting from the sea, the biggest among them had the most peculiar shape.

The anchor was cast at three o'clock in the afternoon between the islands Pullu Sallang, which consist of two islands, one smaller than the other.

20.—At midday I went with the boat to a small (missing in M. S.). Did nothing to-day.

21—22.—I looked round.

23.—I had annoyances.

24.—Early I went to the tin smelting place and botanized; at four o'clock in the afternoon we arrived at the first hamlet, which is called Ringluy, and is the largest of them all; an hour after we came to Kockren. I saw the manner of smelting in the evening.

25.—I went to the mine which lies about quarter of a mile from Kockren. The way passes through a dense forest. From there I went further to a place the tin of which was exhausted.

26.—Went back across the mountains, and arrived at twelve o'clock in Tarmah. The captain went on the board at five o'clock.

27.—I wanted to go on board earlier but there was no V, therefore I had to wait till four o'clock in the afternoon. It was dark when I came to the ship.

28.—I went to the island Pullu Sallang minor, with the boat, the crew of which was to cut and fetch wood for the ship. I found many remarkable things. At five o'clock the ship went under sail, and we had to follow in our boat, but reached the ship before sunset.

29.—We could still see the land in the distance.

30.—My slave-boy died, and was sunk at eight o'clock.

31.—We had almost calm, and advanced but little. Rain-showers refreshed my plants.

1.—We had alternate showers, calm and wind from all directions, and the waves were very high, and made a plaintive noise. We saw to-day the Dorados several times. The English call them Ripling.

2.—We had some showers of rain and wind from all directions. At last it grew favourable for us.

4.—In the afternoon we saw the large Neckkebahr island (Nicobar), which is very mountainous.

We sailed past the before-mentioned island, and saw that it was covered with woods and had many valleys. The weather was fine, with soft north-westerly wind.

6.—We lost sight of the land and our captain had sailed quite straight according to our compass. We were between the 6th and 7th degree of N. Latitude.

8–9.—During these days we had little wind but it was not contrary. We were little more than six degrees of N. Latitude in these days.

10.—Friday. Millions of the shiny Scyllaea passed our ship in the early morning, we were at that time just on the seventh degree of N. L. I tried to catch some, but they were too low in the water, and the wind began to blow strongly from the south-west. They also varied in colour here, from blue to green and silver.

I obtained a piece of rotten wood; upon it were Nereis and the Penna Marina.

On this 10th of April we were at seven and a half degrees of N. L. and at least two degrees of longitude from the nearest land. In the afternoon a sea-snake passed us, which was two and a half feet long, brown on the back, and at the sides it had a yellow stripe, the stomach was white.

13-14.—We had dead calm and heavy showers of rain, and from all this it was clearly to be seen that a change of weather was shortly to be expected.

16.—The rainshowers were exceedingly strong, and the horizon was covered with clouds. The top-masts had been lowered for fear of a storm; in every case prudence was advisable.

17.—The anticipated storm seemed to be above our heads. A large number of birds few past our ship towards the north, among them *Pelecanus Piscator* and the Tern, together with other tropical birds, all of which I knew. It was almost midday before the storm began, and we thought the circumstance of the whole horizon not being dark a good sign, that the weather would not be bad for very long. We had not seen the sun for almost two days and we deemed ourselves on the 8th degree of N. L, and according to our calculation we were still five degrees of distant from Zeylon, to which our course had originally been directed.

18.—We had storms from different sides with frequent showers of rain, which lasted for some time. In the evening the sea was very electric, and the ordinary luminous spots, caused by many small infusory animals, were very bright. Also the fish left long furrows of light behind them when they touched the surface in swimming.

19.—The storms and showers were even stronger to-day, and the horizon was covered all around; specially in the evening we had some violent showers which lasted for very long, and there was strong lightning all around. The sea was not as luminous as yesterday.

20.—Early this morning at 4 o'clock we had the most violent storm which we had hitherto experienced. Our captain was forced to return to where we had come from, because the top part of our ship, which ought to have been repaired long ago, had become quite loose in the fight with the elements and as the whole ship was old, this might have been dangerous. A second circumstance which made him take this decision was that the native sailors, who did not wear any clothes, were in danger of being ill with great fatigue and the continual wet. The wind continued in full force; at 11 o'clock we saw a rainbow round the sun, which had about ten degrees in diameter; we deemed this to be a favourable sign.

The storm and rain continued; at midday we were eight degrees and two minutes of N. L. Towards evening the rain and wind abated little. A *Sterna stolida* was caught with the hand as it grew dark. It had a large wound in the middle of the right wing, and must have been attacked by some animal of the sea, because we were still at four degrees of longitude from the Neckkebars, which was the nearest land.

We continued our journey back.

21.—The weather continued to be the same as yesterday.

22.—My *Sterna stolida*, which I thought to have killed last night, had come to life again and had vomited a small Nautilus, which was the most perfect that I had seen among thousands. The fleshy part of this shell was almost perfect, but more than two-thirds of it had changed into a grass-green colour. I can't decide whether this colour was common to all those that swim in the open sea or only accidental in this one.

The wind was to-day fairly strong from the west; we had little rain and were nine degrees and nine minute. We continued our journey back. I stuffed the bird.

23.—We had little wind and only a few showers. A very large *Squalus Caninus* followed our ship for a long time and had four to six of his pilots with him. They sometimes swam underneath, sometimes above its head. Their colour was sky-blue, and some were almost one foot long. Many things to eat were thrown down, but it seemed to be suspicious, for though it flaired them it refused to eat and so did the pilots. In the evening the Karre Nicobar island could be seen from the mast in the south-east; we were to-day on the ninth degree and some thirty minutes.

24.—The weather was fine to-day and the wind moderate. The Neckkebars were at our side to-day; we were on the ninth degree and nineteen minutes, but so far from the afore-mentioned island that it could only be seen from the top of our mast.

25.—Early this morning we saw another of the Nicobar islands, called Katschin; it was a long, narrow strip of land with high mountains, and at the distance it seemed to be divided along the middle but from the top of the mast, one could see that it was not so. When we were nearest, we were at four German miles distance. At midday we were eight degrees and some forty minutes. The wind and weather were fine.

26.—To-day we still saw the mountain necks of the island we passed yesterday. The wind grew more favourable and stronger, and we had only few small showers. At midday we were eight degrees and twelve minutes. Our course was towards east. Many things drifted past our ship as: *Fucus Sargassum*, etc.

27.—The favourable wind lasted on; at midday we were on the seventh degree and fifty-five minutes. To-day I saw for the first time the young ones of the *Blatta vivipara* creep alive from the living mother.

28.—We had continued favourable wind for our journey back. From the top of the mast land was seen towards evening, which was supposed to be Junk Zeylon, or its foremost islands. The sky was very red in the evening, specially in the east; in the south-west there were some yellow-green spots.

29.—Between three and four o'clock in the morning I saw a faint rainbow in the north, which was caused by the moon being clear and almost full.

30.—We arrived between the islands and cast anchor towards midday near a small island. There we found two English ships, that of Captain James Scott and that of Captain Theserten.

SHORT NOTES.

The "Malingkote" in Borneo in June, 1891.

The "Malingkote" appears to have taken rise from the Sipulote country, the founder being a man named Tahang who dreamed during a severe illness that if certain ceremonies were gone through an angel would appear and if anything was asked for by the angel it must be given at once. If everything asked for was given then the parties would be empowered to see angels ("malikot") and would become invulnerable ("cabal"). They would also receive the power of raising the dead and would be given wings wherewith to fly to the sky.

Those who believed themselves to have been thus empowered, viz.: Tahang's people, went about the country spreading the belief and frightening the other villages into giving up property, &c., to them, stating that if they did not join in "malingkote" they would all be killed by thunder-bolts and their houses destroyed by a hurricane. During the "Malingkote" all fowls, cattle, pigs, and even dogs, &c., have to be destroyed. The people drink all day, and plant no padi, the idea being that when their wings have grown they will fly to the sky and live on the padi there.

One seed of padi planted there grows in ten days, has a never failing crop, and as soon as plucked has a fresh supply next day. The people did not stop at giving away their property, one man even gave away his wife, on condition that his wings should grow in seven days.

It is reported also that one man climbed up into a cocoanut-palm to fly, apparently under the impression that his wings would develope before he reached the ground. They did not do so, and his leg was broken by the fall.

H. WISE.

Stick-Insects destroying Orchids.

A considerable number of insects of different kinds attack and damage orchids under cultivation. These are chiefly beetles, but I have now to record two pests of a different order as most injurious to orchid culture, namely two species of *Phasmidæ*, commonly known as stick insects. It was noticed that the leaves of *Dendrobiums* and other orchids were constantly being gnawed away, especially during the night, and a search disclosed that the damage was being done by two curious stick insects. Specimens were forwarded to Mr. C. O. Waterhouse, of the British Museum, who identified one as a species of *Pyloemenes* very near *P. coronatus* Westw, a native of Ceram, and *Datames Oileus* Westwood, of which there was an unique specimen from Java in the British Museum.

The *Pyloemenes* is by no means as abundant as the *Datames*. It is a cylindrical insect, about an inch and a half long, dark grey and ornamented with thorn-like tubercles.

Datames is about two inches long, and of a light brown colour looking like a piece of rotten wood. Its head is prolonged backwards into a kind of knot-like crest, and ornamented with short sharp tubercles. On the first joint of the thorax is also a small triangular crest and there is another towards the end of the abdomen on the back. A row of small tubercles runs down each side of the body, which is very flat, so that the animal clinging with its powerful legs close to the plant is very easily overlooked. The legs are also roughened with tubercles. The antennoe are finely jointed and shorter than the legs.

These animals are very voracious, and rapidly devour the leaves of any of the epiphytic orchids.

H. N. R.

Notes on an Infant Maias.

Mr. Wallace in his Malay Archipelago describes an infant Maias (orang Utan) most graphically; it cut its first milk teeth shortly after he had it, but it lived only three months. Two years ago I had a Maias of the same age, and when watching it, it was impossible to help being struck with the accuracy of Mr. Wallace's observations. My Maias lived however for fifteen months, during almost the whole period of milk dentition, hence such notes as I made upon it, though very imperfect, may be worth recording. I find they are as follows.—

July 28th, 1890.—The two Maias which I bought of some Dyaks about a week ago are doing well, the baby has only cut the two middle incisors of the lower jaw, and lives entirely on milk. Its instinct to grasp hold of something to prevent accidental falling is so strong as to lead it in the absence of anything else, to grasp the hair of its own head, to which it holds on vigorously sometimes with both hands.

August 12th, 1890.—The elder Maias left five days ago for England and the baby is alone, it is very good and cries only when it feels hungry or lonely, its blanket is sufficient companionship for it, wrapped in this it will lie quite quiet, or let me throw it high in the air and catch it again without any sign of fear, but without its blanket, or unless I hug it close to my body it is terribly afraid of falling, catching tight hold of the hair of its own head with both its hands, and clutching with its feet for something else

August 15th.—The elder Maias has returned again, not having been further than Singapore.

August 30th.—Both Maias are getting on well; the baby has now besides the two lower median incisors cut also the left median upper incisor, and is about to cut right one. It is beginning to climb and gets a little way, it weighs 4℔ 11oz. The elder one is becoming destructive.

September 29th.—The baby Maias has now cut all four median incisors.

January 15th, 1891.—Weight of the baby Maias is now 5℔ 12oz.

April 13th.—The baby Maias has been very ill with diarrhœa and is still ill. The lateral incisors above and below are now through, the first bicuspids have been some time.

April 21st.—The elder Maias died to-day of acute tuberculosis, its liver and lungs were found crammed with tubercle. It had been apparently well till five days ago except for an attack of diarrhœa a week or two before. It had not given up a filthy habit of eating its own dung. The baby is still ill with frequently recurring diarrhœa.

April 23rd.—The baby Maias eats its own dung unless an unlimited supply of such indigestible food as raw Krebong is given it; it still holds on to itself when any one comes near it, but walks and climbs much better now when left to itself. It is in perfect health.

September 28th.—The Maias weighs 9lbs; it has been in excellent health for a long time, suffering only from chronic nasal catarrh, which makes it usually breathe through its mouth. It has now cut three of its canine teeth, the right upper one alone remains uncut. It climbs about readily, but still has the habit of clinging to itself when picked up.

Oct. 5th.—It accidentally strangled itself. It had been tied up to keep it out of mischief, and it wound its chain tightly round a bar in trying to get free.

Its skeleton is now in the Sarawak Museum.

The difference in the rate of developement of children and of the young of the lower animals is mentioned by Darwin in his "Descent of Man" and he says "the Orang is believed not to be adult till the age of from ten till fifteen years."

The average ages at which a child cuts its milk teeth are usually given thus.

Central Incisors	7 months.
Lateral Incisors	9 months.
First Bicuspids	12 ,,
Canines	18 ,,
Second Bicuspids	24 ,,

This rate of teething is taken from observations on European children, whilst natives of tropical climates are supposed to develope more quickly. On the other hand ill-fed town children are apt to cut their teeth more slowly than those in more natural conditions, and my Maias might have developed its teeth more rapidly in the jungle under the care of its mother.

The ages, too, at which the milk teeth are acquired need not be proportional to the general rate of developement in Man and in Maias.

G. F. HAVILAND.

Hints on Reconnaissance for Explorers in Unsurveyed countries.

The following Memorandum has been prepared and distributed by the Intelligence Division of the War Office. It cannot but prove useful to travellers and others in the Malay Peninsula, and for this purpose it has been reprinted in the Journal.

During the last few years so much has been done in the way of exploration, both in Africa and in Asia, that it may be safely said that there is now no large portion of either continent regarding the configuration of which we have not some information.

Travellers in Africa, and still more in Asia, can no longer hope to explore thousands of miles of country never before visited by the white man, nor to discover huge mountain ranges or gigantic lake systems hitherto unknown. There still remains, however, plenty of room for geographical, or, perhaps, to speak more correctly, for topographical enterprise.

Although we now possess a knowledge of the main features of the unsurveyed portions of the globe, sufficient work remains. in the way of filling in detail, to occupy the energies of our explorers for many years to come.

Owing partly to ignorance of the compiler's wants, and partly to a want of appreciation of the manner in which our improved knowledge of geography has affected the class of mapping required, the sketches brought back by explorers are often disappointing. It has been found that, in very many cases, work over which the very greatest possible pains have evidently been taken, is robbed of half or more than half of its value, owing to the traveller having neglected some precaution which would have added little, if at all, to his labour. It is thought, therefore, that a few hints, most of them suggested by actual cases, may prove of use to intending explorers, and tend to ensure their work attaining its full value.

Scale to be adopted.

(I).—Intending travellers are often at a loss what scale to adopt, so a few remarks on the subject may not be out of place.

The size of the scale is, of course, affected by the object in view, but there are some considerations that apply generally to all cases.

The rapidity with which a traveller moves, and the amount of time that he can afford to devote to topography, place a limit to the amount of detail that he can hope to map. The proper scale for him to use, then, is the smallest that will permit of his showing that amount of detail.

The advantage of using the smallest possible scale is that the explorer is thereby enabled to sketch more widely on each side of his route, and the larger the area that he has on one sheet of paper, the easier it will be for him to grasp the configuration of the country.

On the other hand, there are cases, for instance, when the traveller moves along the winding bed of a river enclosed between steep hills, or through thick bush in which it is difficult to plot on a small scale the necessarily very short bearings. In such cases it is advisable to plot the route on a conveniently large scale, and transfer it by reduction to the general.

As a general rule, for sketches not of a purely military character, it may be said that one fourth or one fifth inch to a mile is the largest that the traveller is likely to be able to work up to (except in the cases mentioned above), while one eighth or one tenth inch to a mile will be more suitable for any one who is not devoting his time exclusively to topography.

On the latter scales a large extent of country can be embraced in one sheet, while the smallness of the area of paper covered by the traveller's route and what he can see from it, has a wholesome effect in urging him to make excursions on either side.

It may be said, therefore, that the outside limits between which travellers should select the scale of their general map, are one half to one tenth inch to a mile.

Starting and closing points.

(II).—On receipt of any new work, the compiler begins by locating it.

The work should, therefore, commence from some well known and, if possible, well fixed place shown on some published map. The actual starting point should be described in the report or delineated on the sketch in such a manner, with reference to the surrounding objects, that there may be no difficulty in recognizing it on the published map or on the ground.

It is essential that the route should be continuous, and that it should close either on itself, or on some point that has been well and independently fixed.

In closing, the same accuracy of description is required as at starting.

Information as to the method employed and circumstances under which the work has been executed to be always furnished.

(III).— As the compiler has to fit together routes executed by different men under different circumstances, but all alike in the one respect that they have been mapped under conditions precluding absolute accuracy, it is of the greatest importance to him to have the fullest information as to how the work has been done, in order that he may weigh the evidence properly.

The explorer should, therefore, attach to his map a clear statement as to the following points:—

1. How he has measured his distances; if he has used a base line, he should indicate the position, and state the length and how it was measured.
2. How he took his directions; if a compass was used, what sort of compass it was.

It would also be an advantage if the traveller would occasionally take observations for the variation of the compass. By doing this, he will discover if his bearings are being affected by any local magnetic attraction.

Should he take such observations, he should state where and how they were taken, and with what result.

3. If he has reason to think that the compass needle may have been deflected by local magnetic attraction during any portion of his route, he should state the limits of such possibly disturbed areas.
4. He should also give information as to any portions of his route that differ from the rest in having been mapped with more or with less care or under more favourable or less favourable circumstances.

Use of published maps by explorers.

(IV.)—It is not uncommon for explorers to take a published map and to fill in from their own observations portions of it that have been left blank or that have been incorrectly shown.

In such a case the explorer should state clearly what map has been used, and what points on it have been assumed to be correct.

As it is the compiler's business to study the evolution of maps, he may possibly know that some or all of these points are not so well fixed as the explorer supposes, or he may afterwards receive information of undoubted value, which alters the positions assigned to some of them.

In view of such a contingency, it is very necessary that the explorer should state whether his work fitted correctly into the points as shown in the map used or not. If it did not fit, and if he has altered it to make it fit, he should state what alterations he has made, and how the route would have worked out if it had not been altered. Cases have been known where explorers have distorted their really accurate work, under the impression that they were improving it.

Where, on the other hand, the explorer finds reason to alter hitherto accepted ideas as to the configuration of the ground, he should state clearly that he considers his delineation more nearly correct than the old version.

Where he is at all doubtful as to the truth, but inclined to prefer his own work, he should explain how he would adjust it to the old, should adjustment prove necessary.

Astronomical observations.

(V.)—The places where astronomical observations are taken should be carefully marked on the sketch, and a description should be given sufficiently detailed to enable any subsequent visitor to identify the spot within very narrow limits.

It is not uncommon to see observations for latitude taken over and over again with the greatest possible industry, so as to obtain a value within very few hundred feet of the truth, while the place of observation is described so loosely, with regard to surrounding objects, that the door is opened to an error to be measured in miles. These remarks apply particularly to cases where no map is made on the ground, and only notes taken to be afterwards used for the compilation of the route. Many of the important towns in unsurveyed countries are ill-defined straggling places that extend over a considerable area, and are surrounded by outlying villages and gardens. Now, suppose one traveller pitches his camp in a garden to the north of the town, observes a latitude, and gives his result as the latitude of the town; while another traveller does the same south of the town, it is obvious that the two values will differ considerably.

As a matter of fact, in some cases the latitudes given for the same place by competent observers have been found to differ by as much as two to three miles. The explanation is, of course, simple—the observations were no doubt taken at different places; but, all the same, the compiler is at a loss which to adopt.

If, however, each traveller were to state how far and on what bearing his place of observation lay from the centre of the town, or, better still, from the most conspicuous object in the town, the position of which with regard to the town should be described, the discrepancy would be at once cleared up, and the observations of both travellers would be strictly comparable.

It is essential that all the original observations should be carefully recorded in ink and sent home to the compiler, so that he may check the working and form a sound opinion as to their reliability.

Importance of identifying and fixing places visited by former travellers.

(VI.)—Travellers should remember that a well-executed route reconnaissance is valuable not only for itself, but also for the light it throws on the work of previous explorers, and for the use that can be made of it as an anchorage on which to tie the work of subsequent explorers. They should, therefore, take every opportunity of cutting routes that have been previously traversed, and of fixing on their sketch points that have been shown already on other travellers' routes.

The difficulty that they will experience in recognising the routes of other travellers will teach them better than anything else the precautions they should take to render their own route easy of identification.

The importance of sketching as broad an area as possible.

(VII.)—The various methods of mapping ground are treated so fully in many handbooks, that it is necessary here to touch on only one or two points that have a special bearing on the case, or that have not received adequate attention.

It has been stated above that our improved geographical knowledge has caused a change in the class of mapping required.

Not very long ago any information brought back by an African explorer was compiled into very small scale maps. If the work was to be put to much use it was obviously unnecessary for the explorer to expend his time in mapping details which could not be shown on the scale. All that he required to do was to show the positions of important places, and to delineate generally the larger physical features that he came across. Now, however an explorer's route in the same country would, perhaps, be compiled into a map of 20 miles, or, possibly, 8 or 10 miles to the inch. The difference in the class of work required is obvious. What is now wanted is topography, and as much of it as possible. It cannot be insisted on too much that, to meet our requirements, the traveller should sketch in all he can see. Much of it, no doubt, will be more or less incorrect, but it need not necessarily be misleading. If it is properly distinguished from the rest of the work, any one using the map will know the class to which each portion belongs, and estimate its value accordingly.

Further than that, he should sketch or record all the topographical information that he can obtain from the natives.

His topography will then consist of three classes, which being of different values must be drawn in different styles, so as to be clearly distinguished the one from the other.

Different classes of topography, and method of distinguishing between them.

(1) What he has actually traversed himself and seen sufficiently well to sketch with tolerable accuracy.

This should be drawn in firm lines, that is to say, streams, roads, and contours or form lines should be shown in continuous lines, as in any ordinary map. If the hills are represented by hachures or stumping, they will naturally be shown in as great detail as possible under the circumstances.

(2.) What he has seen from a distance.

He knows that this exists, but cannot be sure of its exact position. This should be drawn in dotted lines, with the hills, where they exist, shown in a rough conventional style.

(3.) What he has obtained from native information.

This should be clearly distinguished from the other work, both the style of drawing, and by a note on the map. "Obtained from hear-say." Unless the explorer is very careful, there will always be a chance of its being mistaken for the representation of ground that he has himself seen. So much is this the case, that some compilers would prefer to have this information recorded in a report, and not shown on the map at all.

On the other hand, a native guide can often point out the general direction of a place, that is not visible at the time, and its approximate position with reference to surrounding objects, which have, perhaps, been located on the explorer's map. It is easier, then, to draw its position on the map than to describe it in words.

Again, the moment a man tries to draw on paper hear-say topography, a host of questions suggest themselves that would probably never have occurred to him if he had contented himself with recording the information in a note book.

If such topography is drawn in a different colour to the rest of the work, or cut off from it by a chain dotted line, there ought to be little chance of mistake.

In any case a record should be kept of the source from which the information is obtained, and of the traveller's opinion as to its probable accuracy.

While dwelling upon the importance of mapping areas and not mere lines, and of getting in all the country right or left of the route that time and opportunity permit, it cannot be too strongly impressed upon the explorer that it is absolutely necessary for the proper utilisation of his work and for his reputation as a reliable observer, that this marked distinction should be made between topography of different degrees of accuracy.

While it is most depressing to receive from an explorer a sketch of his absolute track and nothing more, as if he had never looked to his right or his left, it is perhaps more fatal to the interests of geographical knowledge, when the traveller's work of all descriptions is beautifully finished up, as if it was all of uniform quality, and that the very best possible. Such a map is one of the compiler's greatest difficulties.

If in the first case he laments a lost opportunity, he knows, at any rate, the value of the little he has got; while in the second case he is tantalised by the possession of an apparent wealth of topographical information, the accuracy of which it is morally impossible for him to gauge. Consequently, he cannot tell what to accept and what to reject. If he is too cautious he may reject valuable information; if he is too trusting he may introduce into his work some gross error.

As an additional precaution against a misunderstanding it is most essential that explorers should always show the actual route they followed, and that they should mark with small circles, or in some other way, all points off the route from which they have taken bearings of any importance.

It would then be always possible for the compiler to form some sort of estimate as to what portions of the ground could have been adequately seen.

Importance of taking bearings to distant points.

(VIII.)—Closely allied to the above considerations is the question of recording bearings to different points. Such bearings afford a most useful means of checking the accuracy of the route and of connecting it to other work where the points have been already fixed. These bearings should be separately recorded in a note book in ink, with a note to say whether they *have or have not been corrected for the error of the compass.*

The best plan is always to record the magnetic bearings exactly as read, and to state that this has been done.

Even though it may be obvious to the explorer that the direction of his route will not enable him to obtain a second suitable bearing to the distant point, he should not omit to take an observation on that account. Cases have occurred where single bearings taken independently by each of two travellers, from points some 50 or 60 miles apart, have sufficed to fix the position of an important hill with considerable accuracy.

A commanding point, well fixed in the early part of the route, may afford most valuable assistance in checking the work further on.

The difficulty, however, of identifying a peak on a range of mountains from different points of view, is very great, and considerable care and attention is required to turn such a feature to good account.

Altitudes.

(IX.)—With regard to altitudes, much the some considerations apply as in the case of the traveller's route. If possible, some place of known height should be selected to start from; the series of observations should be unbroken, and should close on some other place of known height.

It is very desirable that the original observations should be sent home to be worked out afresh.

In any case the traveller should explain what datum point he has taken, what height he has assigned to it, and on what authority, what instruments he used, and how he took his observations.

If any heights are entered on the sketch of his route, he should append a note to say whether they denote relative heghts or heights above sea level.

Importance of mapping the drainage systems met with.

(X.)—Every effort should be made to delineate the drainage system of the country. Even now it is not unusual to see sketches of routes crossing rivers with nothing to show which way the water flows. Whenever possible, the traveller should state where the rivers rise and where they flow to. If it is impossible for him to work this out himself, he may do much from native information, while any notes he may make as to the width and depth at various seasons will assist the identification.

In many countries rivers have different names at various points of their course, and it occasionally happens that the traveller hits upon a river which he assumes, wrongly, to be some well-known one, and which he, consequently, calls by that name. To guard against confusion of this sort, he should always insert the local native name, and if he identifies it with any other river he should state his reasons for doing so.

Record of character of country.

(XI.)—The travellers would naturally record in his report, when passing through new ground, everything that he could observe as to the nature of the physical features of the country; the extent and character of the forests; particulars about rivers, both at the time of his visit, and at other seasons, &c., &c.

Much of this should be entered on the map, as it is much easier to indicate there the extent and shape of a forest or marsh, than it is to describe the same in a report.

The points of chief importance are enumerated in any work on reconnaissance. In some countries special points have to be noticed, which might not occur to an ordinary traveller.

It is particularly desireable that travellers should note on their maps the boundaries of the different tribes, carefully distinguishing between those boundaries or portions of boundaries that are well determined and those that are only approximately represented. They should also state the name of the paramount chief, if any, to which the tribe is subject.

All boundary negotiations in Africa turn upon this point, and it is always a fruitful source of trouble; boundary lines are sometimes drawn cutting off tributary tribes from their paramount chief, the result being invariably discontent and often bloodshed.

Names of mountains and villages.

(XII.)—In all countries that do not possess a written language, names are a great difficulty. Even where there is a written language, it is frequently impossible to get one generally accepted name for a mountain, however conspicuous it may be, as it often happens that a peak or range is known by several different names in the different districts around.

It is necessary, therefore, that the traveller should satisfy himself as to whether the important places that he locates are generally known under one name or not, and should state his authority in his report. If he hears of more than one name for a mountain or range of mountains, he should, of course, state both, with the source from which they were obtained.

A difficulty occurs in the nomenclature of villages also, from the fact that they are so often named after the ruling chief, and take, on his death, the name of his successor. At the same time the villages often have, in addition, another name that does not change with the chief. In such cases it is advisable that the traveller should insert the permanent name with the name of the chief in brackets.

Again, it sometimes happens that even after the death of some peculiarly famous chief, his village continues to be called by his name. Or, on the other hand, a chief may move his residence to a new place, which at once takes on his name.

It also frequently occurs, that owing to intestine wars towns and villages which were once well-known and have appeared on travellers' routes, are found by later travellers to have been entirely wiped off the face of the earth without leaving a trace of their having existed; others with new names may have sprung up on or near the original sites. The result is that, when two reliable explorers have gone over the same route at a few years interval, it sometimes happens that their itineraries contain hardly a single name in common.

It is obvious, therefore, that no general rule can be given about such names; and the value of the travellers' map or report will much depend on the trouble that he expends in the investigating and clearly explaining such points.

All names that occur in the report or map, should be printed, in at least one place, in block printing, so that there may be no possibility of any mistake occurring in the spelling.

Method of showing the relative importance of different localities.

(XIII.) In drawing fair maps it is customary to employ different type for different classes of names, such as countries, provinces, capitals of countries, large towns and capitals of small provinces, small towns, villages, tribal districts, chiefs' names, native kraals, rivers, wells and springs, mountains and hills, and descriptive names.

Naturally the explorer cannot be expected to print in a different manner each of the above classes of names; but any indications will be of value that he can give, to show to which class each of his names belongs.

In order to ensure the importance of the different localities being shown clearly on the map, it is necessary for the traveller either to print them on his map in letters proportionate to their relative importance, or to give a list of their names in classes of the various degrees of importance. The identification of names and their proper recording in maps would be much facilitated if all travellers would spell them phonetically in accordance with the system promulgated by the R.G.S., and officially adopted by the Government Departments and by the Intelligence Division, War Office.

Any traveller can do useful work whether he can draw or not.

(XIV.)—In conclusion it must be pointed out that much as detailed reconnaissance of large areas are wanted, it by no means follows that useful work cannot be done by any intelligent traveller, who carefully records the distances and general direction of his marches, and all that he can see or learn as to the physical feature of the country. Routes, of which the traveller has made no sketch at all, are sometimes, in the absence of other information, made the basis of important negotiations; so that no one need be deterred from contributing to the advancement of geographical knowledge, because he has little confidence in his powers as a draughtsman. But under all circumstances it is essential that the traveller should not trust to his memory, nor to the chance that he will be able to assist in the compilation of his work. Everything should be noted down in such a way that it would be intelligible to a person absolutely ignorant of the country.

It is only by doing this that the explorer can ensure his work obtaining full justice.

A BIBLIOGRAPHY OF MALAYA,*

FROM JULY, 1891, TO JUNE, 1892.

BY

C. DAVIES SHERBORN, F.G.S., F.Z.S.

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In compiling this Bibliography all sources of information have been utilised. In inserting, therefore, every publication that has come under his notice, the compiler hopes that the entries will prove of considerable assistance; but as a large proportion of the literature of this district either never reaches England at all, or else arrives so long after as to be too late for examination for this purpose, he begs the reader's indulgence for any error that may be present. His thanks are due to M. Martinus Nijhoff, of the Hague, for information as to some of the more recent books.

◆

"M. A."—De Batoe Tinagat. *Eigen Haard*, 1891, pp. 267-270.

ABENDANON, J. H.—Publiek- en Privaat-rechtelijke verhoudingen tusschen Nederland en de Nederlandsche Koloniën. 8vo. *Batavia*, 1891, 268 pp.

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*By "Malaya" is here meant that part of the Archipelago enclosed in a line drawn round the north of Siam and the Philippines, through Macassar Strait, between Lombok and Bali, round the outlying islands of Java and Sumatra, and to the east of the Nicobar and Andaman Islands.

"Adelante."—De ontwikkeling van de inlandsche hoofden op Java. *Ind. Gids.* xiv, 1892, pp. 683-687.

(Seijid) Ahmed Dahlan (et alii).—Muhimmât en-nafâ'is. 4to. *Qâhira*, 1309, 60 pp. (Concerns Java.)

Aleman y Gonzalen, J.—L'île de la Paragua (Philippines). *Bull. Soc. Acad. Indo-Chine, France*, sec. 2, vol. iii, 1890, pp. 328-335.

Almanak.—Regeerings-almanak voor Nederlandsch-Indië. 1892 2 vols. 8vo. *Batavia*, 1892, xvi, 452 and 673; and xxviii, 846 pp.

————Indische Cultuur-almanak, 1892. 6 Jaarg. By Berkhout, Bergsma, Gorkum, Hagenaar, Fürth, O.Holander, Meyier, Morren, and Stuffken. 8vo. *Amsterdam*, 1891, iv, 347 pp.

————bahasa Melajoe. Maleische Almanak 1892. xvi. jaarg. 8vo. *Djokjakarta*, 1891.

————Javaansche Almanak voor 1892. 39 jaarg. 8vo. *Semarang*, 1892.

————dengan tafel pembatjaan elkitab, jang tundjuk sasahari duwa nats bagi tahon 1892. 8vo. *Batavia*, 1891.

————(Takwim) atau hitoengan hari, boelan, tahoen orang mesehi 1892; tahoen orang Islam 1309-1310; tahoen orang Kong-si 17-18. 8vo. *Batavia*, 1891.

Alvarez, J. R.—Redevoering uitgesproken door den directeur van de Practische School voor Kunsten en Handwerken te Manila, den Heer J. R. Alvarez, bij den plechtigen overgang van den cursus 1891 op 1892. *Ind. Gids.* xiv, 1892, pp. 910-926.

Andre, A. T.—Cultuur en bereiding van indigo op Java. Met teekeningen en plattegronden. 8vo. *Amsterdam*, 1891, 8 and 314 pp.

Andriessen, W. F.—Der Islam in Nederländisch-Ost-Indiën. *Deutsche Rundschau Geogr.* vol. xiv, 1892, pp. 345-351.

Anon.—Een Ambachtschool voor Semarang. *Ind. Gids.* xiv, 1892, pp. 816-820.

————De uitwerking van de blokkade van Atjeh. *Ind. Gids.* xiii, 1891, pp. 2012, 2013.

————Prof. Mr. L. W. C. van den Berg over het arrest van het Hof in zake Atjeh. *Ind. Gids*, xiii, 1891, pp. 1992-1994.

————Een uitdrukkelijke voorwaarde voor Bezuiniging in Indië. *Ind. Gids*, xiv, 1892, pp. 283-285.

————De Billiton-zaak in de Tweede Kamer. *Ind. Gids*, xiv, 1892, pp. 224-271.

————De Weeskamers als Boedelberedderaarter. *Ind. Gids*, xiv, 1892, pp. 119-123.

————De Europeesche industrie in Borneo's westerafdeeling. *Ind. Gids*, xiii, 1891, pp. 2011, 2012.

————Twee Zendingsreizen op Borneo. I. Reis naar den Katingan. II. Reis naar den Miri. De Rijnsche Zending. *Tijdschrift.* 1891, pp. 51-61.

————Twee stationsberichten uit Borneo. I. Kwala Kapoeas. II. Kwala Rongan. De Rijnsche Zending. *Tijdschrift*, 1892, pp. 67-73.

————Het Borneo-tractaat van 20 Juni 1891. *Tijdschr. Ned. Ind.* 1893, pp. 81-97.

————De beraadslaging in de tweede Kamer over het nieuwe Borneo-tractaat. *Ind. Gids*, xiv, 1892, pp. 1148-1150.

————Uitgifte van grond in erfpacht op de Buitenbezittingen. *Ind. Gids*, xiii, 1891, pp. 2008-2011.

————Chineesche vertaling van het reglement op de Brandweer in de afdeeling Stad en voorsteden van Batavia vastgesteld door den Resident van Batavia, den 30 Januari, 1891. (vertaald d. *A. A. de Jongh.*) *Batavia*, 1891.

————Een middel om geregeld aanvoer van Chineesche koeli's te verkrijgen. *Ind. Gids*, xiv, 1892, pp. 296, 297.

————De Chineezen in de Philippijnen. *Tijdschr. Ned. Ind.* 1891, pp. 206–222.

——De Resident van Japara over het tegengaan van Chineezen in de binnenlanden. *Ind. Gids.* xiv. 1822. pp. 681, 682.

——Het Contract van bondgenootschap tusschen de Minahassa en de Compagnie. *Ind. Gids*, xiii, 1891, pp. 1779–1783.

——Handboek voor Cultuur- en handels-ondernemingen in Nederlandsch-Indië. 1891. 4e jaarg. 8vo. *Amsterdam*, 1891, 8 and 641 pp.

——Dag-Register gehouden in't Casteel, Batavia, van't passerende daer ter plaetse als over geheel Nederlandts-India. Anno 1663. 8vo, *Batavia*, (Batav. Genootsch. Kunst. Wet.) 1891.

——Mr. W. K. Baron van Dedem als Minister. *Ind. Gids*, xiii, 1891, pp. 1775, 1776.

——Proeve van beschreven Désa-adats. *Ind. Gids*, xiii, 1891, pp. 1905-1943.

——Het Amerikaansche plan voor een spoorweg van Djember naar Banjoe wangi. *Ind. Gids*, xiv, 1892, p. 107.

——De G. G. Duymaer van Twist en de A. R. Douwes Dekker. *Ind. Gids*, xiv, 1882, pp. 116-119.

——De aanleiding tot de Edische onlusten van 1890. *Ind. Gids*, xiv, 1892 pp. 112-116. (From the *Ind. Milit. Tijdschr.*)

——Evangelisatiewerk in Indië. *Ind. Gids*, xiv, 1892, pp. 151-157.

——Finance of Ned.-Indië. v. Bos.

——Een gedachtenwisseling in de Kamer over Indië's Financiën. *Ind. Gids*, xiv, 1892, pp. 1046-1048.

——Finances of Netherlands India for the year 1890-91. 8vo, *London*, 1892, (Parl. Paper [6205]); 1½d.

——Finances of Netherlands India for the year 1891-92. 8vo, *London*, 1892, (Parl. Paper [6550-67]), 2d.

——Hoe de Gouverneur-generaal zijn belofte jegens de Minahassa nakomt. *Ind. Gids*, xiv, 1892, pp. 844-846.

————Engelands Hydrographische opnemingen in onze Koloniën. *Ind. Gids*, xiii, 1891, pp. 2013-2015.

————De Heer Fransen van de Pulte over Indische Bijdragen die men niet ziet. *Ind. Gids*, xiv, 1892, pp. 286-288.

————Het Indische leger in de Staten-generaal. I. *Ind. Gids*, xiii, 1891, pp. 1529-1556.

————Het Indische leger in de Staten-generaal. II. *Ind. Gids*, xiii, 1891, pp. 1732-1755.

————Het Indische leger in de Staten-generaal. III. *Ind. Gids*, xiii, 1891, pp. 1944-1967.

————Java. Trade of Java for 1891. 8vo, *London*, 1892, (Parl. Paper [6550-91]), 1½d.

————Verslag betreffende de Irrigatiewerken op Java in 1890 en de eerste maanden van 1891. *Ind. Gids*, xiv, 1892, pp. 139-147.

————Het overnemen door den Staat van de particuliere landerijen op Java. *Ind. Gids*, xiv, 1892, pp. 679-681.

————Heerendienstregelingen op Java. *Ind. Gids*, xiii, 1891, pp. 2232-2236.

————Wat een Fransch reiziger over Java en Bali al zoo vertelt. *Ind. Gids*, xiii, 1891, pp. 1237, 1238.

————De Javaan blijve Javaan. *Indi. Gids*, xiii, 1891, pp. 2016, 2017.

————Is de Javaan een luie roofbouwer? *Ind. Gids*, xiv, 1892, pp. 1049-1051.

————Een brief van den Gouverneur-generaal betreffende de gouvernements-koffiecultuur op Java. *Ind. Gids*, xiv, 1892, pp. 641-670.

————Het rapport van den resident van Menado over the verslag der Koffie commissie; met eenige kantteekeningen. *Ind. Gids*, xiv, 1892, pp. 820-844.

————Eenige inzichten en voornemens van den minister van Koloniën. *Ind. Gids*, xiii, 1891, pp. 2237-2243.

————Koloniaal bezit en beheer. 8vo, *Gravenhage*, 1891, 14 pp.

————Een débat over het onderwijs te Wageningen in kolonialen Landbouw. *Ind. Gids*, xiv, 1892, pp. 123-126.

————De Landrente op Java en Madoera. *Ind. Gids*, xiii, pp. 2005-2008.

————LABUAN. Annual Report on Trade and Finance of Labuan, for 1890. 8vo, *London*, 1892 (Parl. Paper [6562-3]), 1½d.

————Een bezoek te Larantoeka. Kathol. Missiën, Jahrg. 16, 1891, No. 1.

————Het bevaren volk bij de Marine. *Ind. Gids*, xiv, 1892, pp. 460-463.

————Geschiedkundig overzicht van de samenstelling der Maritieme middelen in den Nederlandsch-Oostindischen Archipel van af 1816. *Ind. Gids*, xiii, 1891, pp. 2118-2143, 2351-2374.

————Meterologische Waarnemingen in Nederlandsch-Indië, Juli, Augustus en September, 1889. *Nat. Tijd. Ned. Ind.* vol. 1, 1891, pp. 61-90.

————Meterologische Waarnemingen in Nederlandsch-Indië, October, November en December, 1889. *Nat. Tijd. Ned. Ind.* vol. 1, 1891, pp. 349-377.

————Mijnbouw op Borneo, *Ind. Gids*, xiv, 1882, pp. 108-112.

————Een brief van een inlander in de Minahassa. *Ind. Gids*, xiii, 1891, pp. 1235, 1236.

————Een brief van een inlander uit de Minahassa. *Ind. Gids*, xiv, 1892, pp. 1052-1058.

————De Minahassa-zaak in het Indisch Genootschap. *Ind. Gids*, xiv, 1892, pp. 274-280.

————Mohammedaansch - godsdienstige broederschappen, door een oud O. I.-ambtenaar. *Tijdschr. Ned. Ind.*, 1891, pp. 187-206.

————Overbevolking der gevangenissen op Java en Madoera. *Ind. Gids*, xiii, 1891, pp. 1239, 1240.

————Een onderzoekingsreis door Nias: De Rijnsche Zending. *Tijdschrift* (?), 1891, pp. 171-195.

————Verzameling van consulaire en andere verslagen en berichten over Nijverheid, Handel en Scheepvaart. Jrg. 1891, No. 200, Singapore. 8vo, *s' Gravenhage*, 1891, 8 pp.

————History of Opium, opium-eating, and opium-smoking. *Journ. Anthrop. Inst. G. Britain*, vol. xxi, 1892, pp. 329-332.

————De Heer Groneman over Opium-regie. *Ind. Gids*, xiii, 1891, pp. 2226-2231.

————Het smokkelen van Opium tusschen Singapore en Ned.-Indië. *Ind. Gids*, xiii, 1891, pp. 2015, 2016.

————Een ontwerp-overeenkomst met de Billiton-maatschappij. *Ind. Gids*, xiii, 1891, pp. 1218-1231.

————Een ondervraging van eenige oud-ambtenaren van Indië betreffende de Opiumzaak. *Ind. Gids*, xiv, 1892, pp. 449-452.

————De Opiumvloek. I. Tijdschrift van den Anti-opium -bond. *'s Gravenhage*, 1891.

————Hoeveel wettig verkregen Opium op Java en Madoera wordt gesleten. *Ind. Gids*, xiv, 1892, pp. 906-908.

————Een nieuwe Overeenkomst met de Billiton-maatschappij. *Ind. Gids*, xiv, 1892, pp. 1033-1046.

————Overeenkomsten met bestuurders op de oostkust van Sumatra; gebieds-omschrijving betreffende Palos en Donggala; suppletoire contracter met Taroena, Kandhar en Tagoelandang. *Ind. Gids*, xiv, 1892, pp. 1012-1018.

————Overeenkomsten met den Kedjoeroean van Malaboeh, den Radja van Tanah Djawa en den Sultan van Siak Sri Indrapoera. *Ind. Gids*, xiv, 1892, pp. 792-796.

————Overeenkomsten met den Soesoehoenan van Soerakarta, de bestuurders van Tampat Tuan en de hoeloebalang van Langsar en Modjopahit. *Ind. Gids*, xiv, 1892, pp. 633-641.

———Philippines. Trade of the Philippines for 1891. 8vo. *London*, 1892 (Parl. Paper [6550-94]), 2d.

———Het ontslag van Kolonel Pompe als gouverneur van Atjeh. *Ind. Gids*, xiv, 1892, pp. 463-467.

———Postspaarbanken in Indië. *Ind. Gids*, xiv, 1892, pp. 272, 273.

———Een oud-machinist over een versleten Regeeringsmachine. *Ind. Gids*, xiv, 1892, pp. 107, 108.

———Regenwaarnemingen in Nederlandsch-Indië. 12e jaarg. 1890. Uitgeg. door J. P. van der Stock. 8vo, *'S Hage*, 1892, 8 and 419 pp.

———Alphabetisch Register op deel xxxi-l van het natuurkundig Tijdschrift voor Nederlandsch-Indië. 8vo, *'s Gravenhage*, 1891, 4 and 127 pp.

———Javaansche namen voor dieven en roovers. *Ind. Gids*, xiii, 1891, p. 2314.

———Salinan Staatsblad dan Bijblad dari yang baroe kaloear teroes keblakang sampe tahon 1816 aken goenanja anak negri dan sesamanja. 8vo, *Batavia*, 1891, viii, 156 pp.

———De spreuken van Salomo, in het Boegineesch vertaald door B. F. Matthes. 8vo, *Amsterdam*, 1891, iv, 94 pp.

———Sarawak. Notes on a visit to Sarawak and its Trade. *London*, 8vo. 1892, (Parl. Paper [6551-1]), 1½d.

———De opname van het Serajoe-dal en het groote verkeer. 8vo, *Semarang*, 1891, iv, 51 pp., pls. and map.

———Dr. Beneche over de "Sereh." *Ind. Gids*, xiii, 1891, pp. 2312, 2313,

———Siam. Trade, etc. of Siam for 1890. 8vo, *London*. 1892 (Parl. Paper [6550]), with map. 10½d.

———Soerabaja. Door den schrijver van "Het Drama van Tjilegon." *Eigen Haard*, 1891, pp. 628-632.

———Mededeelingen der Vereeniging "Soeria Soemirat," 1891, No. 1. 8vo, *Semarang*, 1891, 24 pp.

———Westindische Negers als Soldaten. *Ind. Gids*, xiv, 1892, pp. 282, 283.

————Statistiek van het vervoer op de Spoorwegen en tramwegen in Nederlandsche Indië van het jaar 1891. 8vo. *'s Hage*, 1892, 44 pp., 4 pls.

————Een gedenkdag op Spoorweggebied. *Ind. Gids*, xiv, 1892, pp. 1051, 1052,

————Netto-ontvangsten van Spoor- en tramwegen op Java en Sumatra. *Ind. Gids*, xiv, 1892, pp. 148-150.

————Berichten uit Nederlandsch-Oost-Indië ten dienste der eerwaarde Directeuren van den St. Claver-bond. 8vo, *s' Gravenhage*, 1891, viii, 132 pp.

————Staatsblad van Nederlandsch-Indië over het jaar 1890. 4to, *Zalt-Bommel*, 1891, xiv, 165 pp.

————Een en ander uit het ontwerp van een wetboek van strafrecht voor de Europeanen in Nederlandsch-Indië, met een paar kantteekeningen van een leek. *Ind. Gids*, xiii, 1891, pp. 2080-2117, 2316-2350; xiv, 1892, pp. 160-174, 302-311.

————Ontwerp van een wetboek van Strafrecht voor de Europeanen in Nederlandsch-Indië, met memorie van toelichting. 8vo, *'s Gravenhage*, (Minister van Koloniën), 1891, xvi, 189 pp.

————Een advies van den Heer Fransen van de Putte in zake Suikercultuur. *Ind. Gids*, xiv, 1892, pp. 807-815.

————De uitvoerrechten op Suiker. *Ind. Gids*, xiii, 1891, pp. 1777, 1778.

————Nadere schorsing van het uitvoerrecht op Suiker in Ned.-Indië. *Ind. Gids*, xiv, 1892 pp. 455-458.

————Nog een en ander uit Sumatra. I. Sipirok. II. Eene vergelijking tusschen Silindong en Sipirok. III. Eerste bericht uit Simangoemban. IV. Jaarbericht over Simangoemban. V. Berichten over Lagoe Bati en zijne buitenposten. De Rijnsche Zending. *Tijdschrift*, 1891, pp. 12-46.

————De tocht van den hoofdingenieur Ijzerman dwars door Sumatra. *Ind. Gids*, xiii, 1891, pp. 1213-1291. (Bat. Nieuwsblad.)

————Kolonisatie in Suriname met Javanen. *Ind. Gids*, xiv, 1892, pp. 459, 460.

————Tabaks. Kaart der Tabaks-ondernemingen in Langat, Deli, Serdang, Bedagei, Padang, Batoe-Bahara, Asahan, Kota-Pinang, Bilah, Laboean-Batoe, en Kota-Pinang. Oostkust van Sumatra. 1: 200,000. Bij W. J. M. Michiel. P. de Vries & Zoon. *Amsterdam*, 1892, 12 fl.

————Theevervalsching op Java. *Ind. Gids*, xiv, 1892, pp. 523, 524.

————Een verhaal van de Tjilegonische troebelen. *Ind. Gids*, xiii, 1891, pp. 1234, 1235.

————De wording en het verloop van de Tjilegonische troebelen in 1888: I. Abdoel Karim in Bantam;—II. Verhouding der kiais tot het volk en de hoofden vóór en na de komst van Abdoel Karim;—III. Toenemen de godsdienstijver en verbreiding van de taregat kadariah; ophitsing tegen het Christendom en de Europeanen;—IV. Voorbereidende maatregelen voor de opstand;—V. De opstand te Tjilegon;—VI. De demping van den opstand;—VII. De bestuursmaatregelen na den opstand;—VIII. Besluit. *Ind. Gids*, xiii, 1891, pp. 1137-1206.

————Rapport aan de Koningin-weduwe, Regentes, van de commissie benoemd bij koninklijk besluit van 31 Juli, 1889, No. 27 tot het uitbrengen van een advies omtrent de vraag: of de bestaands indeeling der Zeemacht in den Nederland Oost-Indischen Archipel, overeenkomstig het koninklijk besluit van 16 November, 1866, No. 80 (Indisch Staatsblad 1867, No. 56,) al dan niet behoort te worden bestendigd? 4to, *'S-Hage*, 1891, 22 and 61 pp.

————De Zending in ons Parlement. I. and II. *Ned. Zendingsts.*, vol iii, 1891, pp. 293-309; 364-375.

————Vierde Nederlandsche Zendingsconferentie. *Ned Zendingsts.* vol. iii, 1891, pp. 65-116.

————Enkele getuigenissen uit Indië voor de Zending: De Rijnsche-Zending. *Tijdschrift* (?), 1891, pp. 166-168.

————Uit het Koloniaal-Verslag van 1891, Eerendienst, Christelijke Godsdienst. *Mid. Ned. Zendel.* vol. xxxvi, 1892 pp. 34-64.

————Inhoud van het Summier Zieken-rapport van Nederl.-Indië over het jaar 1890. *Geneesk. Tijdschr. N. I.* vol. xxxi, Afl. 3, 1891, p. 155.

————Zonneschijn en bloemengeur. Proza en Poëzie van Adriani, Beets, Boddaert, Laurillard, Pierson, Ridder, Riemens, Adama v. Schettema, Schwartz, Socra Rana, e. a. 2 dl., 8vo, *Utrecht*, 1891, 6 and 188, 6 and 156 pp.

ARCIS. A. D'—Sumatra. Lettres du docteur Elio Modigliani. *Le Globe* (*Bull.*) [? *Geneva*], vol. xxxi, 1892, pp. 83-89.

ATERRA.—Het groot-ambtenaars-examen. *Ind. Tolk*, *Nieuws v. d. Dag*. 1891, (Nos. 99-103.)

B., ANNA VON.—Een kort verblijf op de Crag te Pinang. *Eigen Haard*, 1892, pp. 246-249.

"L. B."—The Batak-Karo (Sumatra.) MS. [of J. Claine] on the "Microbe." *Asiatic Quart. Rev.* ser. 2, vol. iii, 1891, p. 158, pl.

"M. B."—Herinneringen aan Borneo's Westkust. I.-IX. *Haarlem Courant*, Ap.-June, 1891.

B. AND P.—Indisch-landbouwonderwijs. *Ind. Gids*, xiii, 1891, pp. 1968-1991.

BAESSLER, A.—Zwei Tage in Atjeh, Verh. *Ges. Erdk. Berlin*, vol. xviii, 1891, pp. 471-487.

BALEN, J. H. VAN.—De Nederlanders in Oost en West, te water en te land. 2e serie, Deel v. De page van de Sultane. Historisch verhaal van den oorlog met Bantam in 1682. 8vo, *Amsterdam*, 1891, 181 pp.

————De Nederlanders in Oost en West, te water en te land. 2e serie, deel vi. De verborgenheden van Tirtyassa. 8vo. *Amsterdam*, 1891, 183 pp.

BARRANTES, V.—Historia de la pirateria malayo-mahometana in Mindanao. Joló, y Borneo. *Bol. Ac. Hist. (Madrid)*, vol. xx, 1892, pp. 155-159.

BARTHOLOMEW, J. G.—The mapping of the world. Part III. Asia. *Scottish Geograph. Mag.* March, 1892, pp. 124-151.

BARTLETT, EDWARD.—Notes on the Bornean Rhinoceros. *Pros. Zool. Soc.* 1891, pp. 654-655, fig.

"BATAVUS."—Een tocht naar Java's Zuider-zeestrand. *Eigen Haard,* 1892, pp. 86, 102, 119.

BEDDOME, R. H.—Description of new Land-shells from the Indian region. *Pros. Zool. Soc.* 1891, pp. 313-315, pl. xxix. [Helix colletti; H. shanica; Ennea (Huttonella) seatoni.]

BEDOT, MAURICE.—Souvenirs d'un voyage dans l'archipel malais. *Le Globe (Bull),* [*? Geneva*], vol, xxxi, 1892, p. 65.

BEESTON, R. D.—Report on the Segama Expedition. *British North Borneo Herald,* January 1888, p. 304.

BEMMELEN, J. T. VAN.—Een reisje naar de Zuidkust van de Preanger. *De Gids,* 1891, pp. 253-290.

BENECHE, F.—Is het mogelijk, uit typische "Sereh" - stekken gezond suikerriet te telen? *Med. Proefstation Mid. Java.* 1890.

————Over de bordeaux-roode kleur der Suikerriet-wortels. *Med. Proefstation Mid.-Java.* 1890.

————De bestrijding des onder den naam "sereh" samengevatte ziekte-verschijnselen van het suikerriet. [*Med. Mid.-Java Proefstation,* 1891.]

BENKO, JEROLIM.—Die Schiffs-station der K. und K. kriegsmarine in Ost-Asiën. Reisen S. M. Schiffe "Nautilus" und "Aurora" 1884-1888. 8vo, *Wien,* 1892, 990 pp., 3 maps.

BENNEKOM, K. H. O. VAN.—Een en ander over het Indische leger. *Ind. Tolk Nieuws Dag,* 1891, (nos. 99-103.)

BENNEKOM, C. A. O. VAN.—Werving voor het Indisch eleger. *Ind. Tolk, Nieuws v. d. Dag,* 1891, (nos. 82-89).

BENNEKOM, K. H. O. VAN.—Over de werving van't Nederlandsch-Oost-Indische leger. *Ind. Tolk, Nieuws v. d. Dag,* 1891, (nos. 104-107.)

Berg, L. W. C. van den.—Het misdrijf van verkrachting in verband met het Mohammedaansche huwelijksrecht. *Tijdschr. voor strafrecht*, vol. v, 1891, pp. 465-476.

Bettink, H.—De Protestantsche Zending—geen mislukking. *Ned. Zendingsts.* vol. iii. 1891, pp. 116-124.

————De Protestantsche Zending geen mislukking, maar de Zegepraal des geloofs. *Ned. Zendingsts.* vol. iii, 1891, pp. 344-358.

Bieger, Ph.—Javaansche volksverhalen. *Med. Ned. Zendel.*, vol. xxxv, 1891. pp. 213-224.

Bik, A. J. E. A.—Klachten over de rechtspraak van het Hoog Getrechtshof in Ned.-Indië *Ind. Gids*, xiv, 1892, pp. 218-223.

Blumentrill, F. Las razas indigenas des Filipinas. *Bol. Soc. Geogr. Madrid*, vol. xxviii, 1891, pp. 7-42, 1 pl.

————Die Magmindanaos. *Ausland*, 1891, pp. 886-892.

————Die "Moros" der Philippinen. *Globus*, vol. lx, 1891, pp. 369-371.

————Begleidworte zur karte von Ost-Mindanao. *Mitth. k. k. geogr. Ges. Wien*, vol. xxxiv, 1891, pp. 342-355, map.

————Eingeborene der Philippinen. *Zeitschr. Ethnol.* vol. xxiii, 1891, p.436.

Bock, C.—Le Bouddhisme au Laos. *Bull. Soc. Acad. Indo-Chin. France*, ser. 2, vol. iii, 1890, pp. 117-190, pl.

Boerlage, J. G.—Handleiding tot de kennis der flora van Nederlandsch-Indië. Beschrijving van de families en geslachten der Nederl. Indische Blauersgamen. Deel II. Dicotyledones Gamopetalæ. 1e stuk. Inferæ. Heteromeræ. Fam. lxvii. Caprifoliaceæ. Fam. lxxxii. Styraceæ. 8vo, *Leiden*, 1891, 12 and 333 pp.

Brettger, O.—A Struebel's Konchylien aus Java, II, und von den Molukken. *Ber. Senck. Ges.*, 1891, pp. 241-318, 2 pls.

Bool, H. J.—De verpachte middelen in Nederlandsch-Indië. *Vragen des Tijds*, vol. xviii, 1892, pp. 25-51.

Bordes,—de.—Spoorwegexploitatie op Java. *Ind Gids*, xiii, 1891, pp. 2212-2224.

BORNEO.—Grensscheiding tusschen Nederlandsch-en Britisch-Borneo. *Ind. Gids*, xiii, 1891, pp. 1634-1643.

————Trade, etc. of Borneo for 1890, 8vo. *London*, 1892 (Parl. Paper [6550-5]), 2d.

————Trade, etc. of British North Borneo for 1890. *London*, 1892 (Parl. Paper, F. O. Report), 2d.

————Convention between Great Britain and the Netherlands defining Boundaries in Borneo. 8vo. *London*, 1892 (Parl. Paper [6553]), ld.

BOS, E. RITTNER.—Financieel Overzicht [Ned.-Indië.] Monthly in *Ind. Gids*.

BOSSCHE, VAN DEN.—De heer van den Bossche, oud-resident van Bantam, over Abdoel Karim in 1875. *Ind. Gids*, xiii, 1891, pp. 1771-1774.

BOUDEWIJNZE, J. and G. H, VAN SOEST.—De Indo-Nederlandsche Wetgeving. 35e afl. 1890, 8vo, *Amsterdam*, 1891, pp. 169-384.

BOULENGER, G. A.—On new or little-known Indian and Malayan Reptiles and Batrachians. *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, 1891, pp. 288-392. [*Gonyophis*, n. g.; *Rana hosii*, n. sp.]

BOWMAN, ANNA.—Twee jongens op reis op de zee oevers van de Oost. Vertaald door G. Jaspers. 3e druk, 8vo. *Nijkerk*, 1891, 391 pp.

BRAND, P.—[=contre amiral Réveillère]. Cà et la.—Cochinchine et Cambodge—L'âme Khmère: Ang Kor. ed. 3, 8vo, *Paris*, 1892, 451 pp.

BRANDES, J.—Nog eenige Javaanische piagem's uit het mohammedaansche tijdvak, afkomstig van Mataram, Bantĕn en Palembang. *Tijdchr Ind. Taal-Land-Volk*, vol. xxxv, 1891. pp. 110-126; 200-208.

————Het onderzoek naar den oorsprong van de Maleische Hikayat Kalila dan Damina. *Feestbundel aan Prof. M. J. de Goeje*, 8vo, *Leiden*, 1891, pp. 77-110.

BRANDSTETTER, R.—Charakterisierung der Epik der Malaien 4to, *Luzern*, 1891, [Progr. Kantonsschule Luzern], 46 pp

Brill, E. J.—Correspondentie-artikel [en Wilken's Volkenkunde van Nederlandsche-Indië]. *Ind. Gids*, xiv, 1892, pp. 900-912.

Brissand, L.—Petit recueil malais-français à l'usage des élèves de première et de seconde années. 8vo, *Paris*, 1891, 76 pp.

Broek, J. A. van den.—De Cheribonsche opstand van 1806. *Tijdspiegel*, 1891, pp. 368-384.

Brons-Middel, R.—Djoeroe bahasa Melajoe-Olanda, Woordenlijst Maleisch-Hollandsch. 8vo, *Batavia*, 1891.

—————Losse schetsen van Nederlandsch Oost-Indië. ed. 2, 8vo, *Groningen*, 1891, 4 and 91 pp.

Brook, George.—Descriptions of new species of Madrepora in the collection of the British Museum. *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, 1891, pp. 458-471. [*M. bruggemanni; M. (Isopora) hispida; M. polymorpha.*]

Brooke [Lady; R. of Sarawak,]—Photograph of human figure found in Sarawak. *Journ. Anthrop. Inst. G. Britain*, vol. xxi, 1892, p. 282.

Brooshooft, P.—Zijn meije komt uit! Oorspronkelijk Indisch tooneelspel in drie bedrijven. ed. 2, 8vo, *Kampen*, 1891, 98 pp.

Brose, M.—Repertorium der Deutsch-Koloniale Litteratur. 1884-1890. 8vo, *Berlin*, 1891, viii, 113 pp., 2 m.

Brot, A.—*Paludomus palawanicus* n. sp. *Nautilus*, vol. v, 1891, pp. 17, 18. [Philippines.]

Brouwer, J. L.—Rapport over den proeftuin te Bagong. 8vo, *Soerabaia*, 1891, 18 pp.

Bruijn, J. de,—Het notoriaat in Nederlandsch-Indië. 8vo, *Djokjakarta*, 1891, 88 pp.

Buren Schele, A. D. van.—Keur vam gedenkwaardigheden uit de geschiedenis der Nederlandsche Oost- en West-Indische bezittingen. 8vo, *Nijmegen-Arnhem*, 1892, 10 and 280 pp.

Butler, A. G.—On a collection of Lepidoptera from Sandakan, N. E. Borneo. *Pros. Zool. Soc.* 1892, pp. 120-133, pl. vi. [Mydrothauma ada, gen. et sp.; Siglophora bella, gen. et sp.;

Agindra carnea; Pachydasys consentanea, gen. et sp.; Paltydasys pryeri, gen. et sp.; Poccilogramma picatum, gen. et sp.; Durdara ovifera; D. robusta; Pharambara vinosa; Syngonorthus subpunctatus, gen. et sp.; Chrysocraspeda vinosa; Maresia? undifasciata.]

——————Revision of the Noctuid Moths in the Natural History Museum hitherto referred to *Eriopus* and *Callopistria*. *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, 1891,—.70-78.

BUYS, M.—Batavia, Buitenzorg en de Preanger. Gids voor bezoekers en toeristen. 8vo, *Batavia*, 1892, 14 and 158 pp., 2 kaarten.

CABALLERO Y ESTEBAN, T. T.—De oriente á occidente. Commercio, Industria, Administración é Impuestos de los pueblos antiguos. *San Sebastian*, 1891.

CALON, L. F.—Eenige opmerkingen over het dialect van Sikka, gevolgd door eenige bemerkingen op de vorige lijstjes, eenige spreekwijzen. *Tijdschr. Ind. Taal-Land-Volk*, vol. xxxv, pt. 2, 1892, pp. 129-199.

CANAMAQUE, F.—Les îles Philippines. *Bull. Soc. Acad. Indo-Chin. France*, ser. 2, vol. iii, 1890, pp. 299-327.

CARTHAUS, EMIL.—Aus dem Reich von Insulinde, Sumatra und der Malaische Archipel. 8vo, *Leipzig*, 1891, vi, 267 pp.

CATALOGUS van het Depôt van leermiddelen te Weltevreden, 1892. Deel II. 8vo, *Batavia*, 1891, 27 pp.

——————van de boeken en kaarten uitmakende de bibliotheek van het Departement van Koloniën. 3e vervolg, met alphabetisch register. 8vo, *'s Gravenhage*, 1891, vi, 106, ix pp.

CATALOGUE de la Bibliothéque scientifique de Sen. M. G. A. Wilken. 8vo, *Leiden*, 1892, 105 pp.

CHAMBULA, A.—Die Holländisch-ostindische Gesellschaft (1602-17 98) kein vorbild für unsere Kolonisations-Gesellschaften. 4to, *Köln*, 2891, 28 pp.

CHIJS, F. A. VAN DER.—Plakaatboek (Nederlandsch-Indisch. 1602-1811) Deel VIII. 1765-1775. (Uitg. door het Batav. Genootsch. kunst. en wetensch.) 8vo, *Batavia*, 1891, 2 and 1043 pp.

————*Ibid*, Deel IX. 1775-1811. Nieuwe statuten van Batavia. *Ibid.*, 1891, 8 and 647 pp.

CLAINE, J.—The Oeloes of Sumatra (being extracts from the diary of . . . . .). *Asiatic Quart. Rev.* ser. 1, vol. ii, 1891, pp. 227-233, pl.

————L'île de Sumatra et la presqu'île de Malacca. *C. R. Soc. Geogr. Paris*, 1891, pp. 505-507.

————Compte rendu de la conférence sur la Malaisie. *Bull. Soc. Geogr. Anvers*, vol. xvi, 1892, pp. 302-304.

CLERCQ, F. S. A. de.—De hervorming van het Minahassa-stelsel. *Verslag. Ind. Genootsch.* 1891, pp. 203-231.

————Die gegenwärtige verbreitung des Blaserohr's und Bogen's im Malayischen Archipel. *Intern. Arch. Ethnogr.* vol. v, 1892, pp. 54-57.

CLUTTERBUCK, W. J.—About Ceylon and Borneo. 8vo, *London*, 1891, pp. x. and 265, maps and figures.

COLLARD, PAUL.—Le Cambodge. La race Khmer. Les mines d' Ang-Kor. *Bull. Soc. Sci. Réunion*, 1888, (1889), pp. 95-108.

CARPON.—Le commerce des îles Philippines. *Bull. Soc. Acad. Indo-Chin. France*, ser. 2, vol. iii, 1890, pp 278-293.

CREMER, J. T.—Koloniale politiek. Twee redevoeringen. 8vo, *Haarlem*, 1891, 39 pp.

"D.—"Banteng of Santeng. *Ind. tolk, Nieuws v. d. Dag*, 1891 (no. 82-89.).

DAENDELS, H. W.—See KNOOP. W. J.

DANIELLI, J.—Studio craniologico sui Nias. *Arch. antrop. Etnol.* vol. xxi, 1892, pp. 275-314, 3 pls.; appendice, pp. 445-449.

DAUD EL FATTANI.—Dijâ-el-murîd. 4to, *Kairo*, 1309, 23 pp. [Concerns Java.]

DAVELAAR, W. A. J. VAN.—Middenpersonen tusschen de districts-beambten en dessa-hoofden op Java. *Tijdschr. Ind. Taal-Land-Volk.* vol. xxxiv, 1892, pp. 365–372.

DEDEM,—VAN.—Een nota van den Minister van Koloniën betreffende de Suikercultuur. *Ind. Gids.* xiv, 1892, pp. 797-807.

DELAPOSTE, L.—La grande voie commerciale de l'Indo-Chine. Le Mé-kong et le navigation á vapeur. *Rev. de Geogr.* vol. xv, 1891, pp. 183-193.

DELPRAT, T. F. A.—Spoorwegaanleg van Sumatra's westkust, *Eigen Haard*, 1891, pp. 697, 711, 727, 740, 760.

DEVENTER, M. L. VAN.—Het Nederlandsch Gezag op Java en onderhoorigheden sedert 1871. Deel I. 1811-1820. *'s Gravenhage*, 1891, ccx, 349 pp.

————Daendels - Raffles, IV. *Ind. Gids*, xiii, 1891, pp. 1387-1412; 1593-1604.

————Ter gedachtenis aan den heer M. L. van Deventer. *Ind. Gids*, xiv, 1892, pp. 521, 522.

DEVERIN, H.—L'art Kmer. 8vo, *Paris*, 1891, 30 pp., 8 figs.

DIJK, P. VAN.—Bezoek aan de Wereldtentoonstelling van 1889 te Parijs. *Jaarb. Mijn. Ned. O. I.* vol. xx, (Techn.) 1891, pp. 1-172, pls.

DIJKSTRA, H.—Het Evangelie in onze Oost. Geschiedenis der protestantsche Zending in het tegenwoordige Nederlandsch-Indië van de eerste vestiging tot op onzen tijd. Deel I, 8vo, *Leiden*, 1891, iv, 212 pp.

DISTANT, W. L.—On some undescribed Cicadidæ, with synonymical notes. *Ann. Mag. Nat. Hist.* ser. 6, vol. ix, 1892, pp. 313-327. [*Mogannia effecta.*]

DRUDE, O.—Handbuch der Pflanzengeographie. 8vo, *Stuttgart*, 1890, 552 pp., 4 maps.

DUBOIS, E.—Voorloopig bericht omtrent het onderzoek naar de Pleistocene en Tertiaire vertebraten Fauna van Sumatra en Java, gedurende het jaar 1890. *Tijdschr. Ned. Ind.* vol. li, 1891, pp. 93-100.

DU BOIS, F.—Le pays des princes a Java. *Bull. Soc. Neuchateloise*, vol. vi, 1891, p. 126.

————Huit jours dans l' île de Bali. *Rev. Deux Mondes*, June 1891, pp. 571-601.

EEKHOUT, R. A.—Aanleg van Staatsspoorwegen in Nederlandsch Borneo en Zuid Sumatra. *Tijdschr. Ned. Aard. Genootsch.* vol. viii, 1891, pp. 955-988; and 8vo. *Leiden*, 1892, 31 pp., 2 kaarten.

————Indië zooals het is, en wat het worden kan. *Ind. Gids*, xiv, 1892, pp. 189-204.

ELLINWOOD, F. F.—Siam, an historical sketch. *Missionary Rev World* May, 1892.

ELLIOT, D. G.—A list of birds from North-Eastern Borneo, with field notes by Mr. C. F. Adams. *Ibis*, 1891, pp. 7-16.

ELWES, J. H.—On butterflies collected by Mr. W. Doherty in the Naga and Karen Hills and in Perak. Pt. 1. *Proc. Zool. Soc.* 1891, pp. 249-289 pl. xxvii. [*Mycalesis dohertyi* (Perak.)]

ENT, M. VAN DER.—Hollandsch-Soendasche spreekwijzen, brieven en korte opstellen. 8vo, *'s Gravenhage*, 1891, 106 pp.

ENTHOVEN, J. J. K.—De topographische opneming der westerafdeeling van Borneo. *Album d. natuur*, 1892, pp. 133-147.

ERJE, J.—Uit het Indische soldatenleven. *Nederland*, 1891, pp. 73-88.

ESCHE, J. M.—Nog eens de Gouvernements-koffiecultuur. *Ind. Gids*, xiv, 1892, pp. 949-972.

————De positie der desa-hoofden. *Ind. Gids*, xiii, 1891, pp. 1328-1359.

ESSER, I.—Een eenzame strijder op een bijna vergeten arbeidsveld. *Ned. Zendingsts.* vol. iii, 1891, pp. 249-256.

FIGEE, S.—Uitkomsten van meteorologische waarnemingen in Nederlandsch-Indië gedurende de maanden Januari tot Juni van het jaar 1890. *Nat. Tijd. Ned. Ind.* vol l, 1891, pp. 567-626.

FIGEE, S. and H. ONNEN.—Vulkanische verschijnselen en aardbevingen in den O. I. Archipel waargenomen gedurende het jaar 1889. *Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 166-197.

FISCHER, P.—Catalogue et distribution géographique des mollusques terrestres, fluviatiles et marins d'une partie de l' Indo-Chine. 8vo, *Autun*, 1891, 192 pp.

FOCKENS, P.—Koloniale belletrie. *Vragen v. d. Dag*, 1891, pp. 271-384.

FOCKER, A. A.—Volledige leercursus in brieven om zonder onderwijzer de Javaansche taal te leeren. Brief 9 en 10. 8vo, *Zutphen*, 1891, pp. 129-160.

————*Ibid.* Brief 11 en 12. *Ibid.* 1891, pp. 168-192.

FOREMAN, J.—The Philippine Islands; historical, geographical, ethnographical, social and commercial sketch of the Philippine Archipelago, and its political dependencies. *Hongkong*, (*London*, Low), 1891, xiii, 495 pp., map.

FORTUIN JEANNE EN HAAR MAN.—Brieven uit Soerabaja van eene dame aan hare vriendin te Leiden. (2e bundel.) xxiii-xlvii. 8vo, *Haarlem*, 1891, 4 and 263 pp.

FOURNIER DE FLAIX.—La statistique des religions. *Bull. Inst. Intern. Statistique*, Ann. 1889 (1890), pt. 2, pp. 125-146.

"G. G."—De werkkring van den Eerstaanwezend Ingenieur in Indië. *Ind. tolk, Nieuws v. d. Dag*, 1891 (no. 12-19.)

GELCICH, E.—Die erste Expedition zur förmlichen Besitzergreifung der Philippinen. *Zeitschr. Ges. Erdk. Berlin*, vol. xxxvi, 1892, pp. 491-502.

GERTH VAN WIJK, D.—Iets over verschillende Maleische redactiën van den Seri-Rama. *Tijdschr. taal-land-volk*, vol. xxxiv, 1891, pp. 401-434.

GIJSBERTS, A. H.—De tegenwoordige politeke en economische toestand van de westkust van Borneo. *Verslag. Ind. Genootsch.* 1891, pp. 175-202.

————De grensregelingen tusschen Noord-Borneo en de Nederlandsche bezittingen op dat eiland. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (no. 104-107).

GORHAM, H. S.—Descriptions of coleoptera collected by Mr. John Whitehead on Kina Balu, Borneo. Families; *Hispidæ Erotylidæ, Endomychidæ, Sycidæ, Lamdyridæ. Proc. Zool. Soc.* 1892, pp. 83-90, pl. iv. [Prionispa pulchra; Asmonax whiteheadi, gen. et sp.; amphisternus armatus; Eumorphus tumescens; E. lucidus; Pyrocoelia; Diaphanes apicalis.]

GORKOM, K. W. VAN.—Reformatie van't Binnenlandsch Bestuur op Java en Madoera. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (no. 104-107),

————Inlandsche ambtenaren. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (nos. 99-103).

GRAAFLAND, N.—De huwelijksvoltrekking van inlandsche Christenen in de Molukken en de Minahassa. *Ned. Zendingsts*, vol. iii, 1891, pp. 129-150.

GRANT, W. R. OGILVIE.—Description of a new species of *Arborophila*. *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, 1891, pp. 297, 298. [*A. sumatrana.*]

GRASHUIS, G. J.—Diseases ascribed to microbes among the Bataks. *Asiatic Quart. Rev.* ser. 2, vol. iii, 1892, p. 463.

————Note on the Toba-Batak codex Sibrajanus. *Asiatic Quart. Rev.* ser. 2, vol. iii, 1892, p. 464.

————Bijdrage tot de kennis van het Soendaneesch. 8vo, *Leiden*, 1891. xvi, 80 pp.

GREVE, W. R. DE.—De cultuur en de bereiding van thee op Java. *Eigen Haard*, 1891, pp. 489, 522, and 539.

GRIJS, C. F. M. DE.—Boekhouding van Chineezen. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (nos. 108-111.)

GRONEMAN, J.—Uit en over Midden-Java. Onuitgegeven en uitgegeven brieven over opiumpacht, Chineezen-woeker en andere Javaansche belangen. 8vo, *Zutphen*, 1891, 324 pp.

GROOT, J. J. M. DE—Over het belang der kennis van China voor onze kolonien, uit een politiek en wetenschappelijk oogpunt. 8vo. *Leiden*, 1891, 35 pp.

————Het vervoer te water van militaire passagiers en goederen in Nederlandsch-Indië, nogmaals China's consulaire politiek. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (no. 82-89).

GROTHE, J. A.—Archief over de geschiedenis der oude Hollandsche Zending. VI. De Molukken. 1625-1638. 8vo, *Utrecht*, 1891, 431 pp.

GRUNDEMANN, R.—Bilder aus Sumatra. 12mo, *Berlin*, 1891 31 pp.

HAMY, E. T.—L'oeuvre ethnographique de Nicolas Martin Petit (1801-1804). *L'anthrop.* vol. ii, 1891, pp. 601-622.

HARRINGTON, J. E. M.—Ostindischer Thee. Geschichtliche Darstellung seiner cultur und seines Handels. [Transl. by C. F. Bottjer.] 8vo, *Hamburg*, 1891, 18 pp.

HARTERT, E.—Ueber einer kleine Vogelsammlung aus der Provinz Preanger in West Java. *Ornis*, vol. vii, 1891, pp. 113-123.

————Die bisher bekannten Vögel von Mindoro, nebst bemerkungen über einiger Vögel von anderen Inseln der Philippinen-Grupp. *Jahrb. f. Ornith.* 1891, pp. 199-206, 292-302.

HATCH, F. H.—The Physical features and Geology of Borneo. *Natural Science*, April 1892, pp. 108-166.

HEERES, J. E.—Een bezoek bij een Sultan van Atjeh in 1640. *Ind. Gids*, xiii, 1891, pp. 2144-2149.

HEIN, W.—Beiträge zur Ethnographie von Borneo. *Intern. Arch. Ethnogr.* vol. iv, 1891, p. 285.

HELFRICH, O. L.—Lampongsche raadsels, spreekwoorden en spreekwijzen. *Bijdr. Taal-Land-Volk. N. I.* vol. xl, 1891, pp. 612-619.

————Verzameling Lampongsche teksten. *Vert. Batav. Genootsch. Kunst. Wet.* vol. xlv, heft 4, 1891, (102 pp.).

————Proeve van eene Lampongsch-Hollandsche woordenlijst, bepaaldelijk van het dialect van Kroë. *Vert. Batav. Genootsch. Kunst. Wet.* vol. xlv, heft 3, 1891 (120. pp.).

————Aanvullingen en verbeteringen op de Maleisch-Nederlandsch-Enganeesche woordenlijst. *Tijdschr. Ind. Taal-Land-Volk.* vol. xxxv, pt. 2, 1892, pp. 228-233.

HELLWALD, FR. VON.—In Landen der Laoten. *Om*, vol. xvii, 1891, pp. 33-36.

————Rochedragons Wanderungen in Cochin-china und Kambodiah. *Om*, vol. xviii, 1892. p. 28.

HENDRIK VAN BALEN, J.—De Nederlanders, etc. ser. 2, Deel IV. Het geheim van mijnheer Tukker. De opstand van het Kakihan-verbond op Ceram in 1860. 8vo, *Amsterdam* 1891, 194 pp., 12 pl.

HERDMAN, W. A.—A revised classification of the *Tunicata*, with definitions of the orders, sub-orders, families, sub-families, genera, and analytical keys to the species. *Journ. Linnean Soc.* (Zool.), vol. xxiii, 1891, pp. 558-652. [Gives geographical distribution.]

HERVEY, D. F. A.—Valentyn's account of Malacca. *Journ. Straits Br. R. A. S.* no. 22, 1891, pp. 225-246, map.

HEURTEL,—.—Voyage en Laos. *Rev. Mar. et Colon.* 1890 (Oct.), pp. 63-78, 2 maps.

HEYDE, H. C. VAN DER.—Kijkjes in de Oost. Een leesboek voor de volksschool. I. Java. ed. 4, 8vo, *Groningen*, 1891, viii, 136 pp.

[HICKSON, S. J.]—Die Sakei-Kanoes. *Globus*, lx, 1891, p. 154.

HOEVELL, G. W. W. C. VAN.—Todjo, Posso en Saoesoe. *Tijdschr. Ind. Taal-Land-Volk.* vol. xxxv, 1891, pp. 1-47.

HOEZOO, W.—Uit het verslag (over de zending te Samarang). *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 65-82.

HOOZE, J. A.—Overzicht der voornaamste kolenterreinen van den Nederlandsch-Indischen Archipel. *Tijdschr. Ned. Aard. Genootsch.* vol. ix, 1892, pp. 129-160.

HORDIJK, PIJNACKER.—Het adres van den Gouverneur-General omtrent de Gouvernements-koffiecultuur op Sumatra's westkust. *Ind. Gids*, xiv, 1892, pp. 1018-1033.

HUBRECHT, A. A. W.—Reisherinneringen uit de tropen. I. *De Gids*, 1892, pp. 503-525.

HUYSER, P. C.—De Indische pers over de Gouvernements-koffiecultuur. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (no. 91-98).

IJZERMAN, J. W.—Beschrijving der ondheden nabij de grens der residentie's Soerakarta en Djokdjakarta. Uitg. Batav. Genootsch. Kunst. Wetensch. 4to, *Batavia*, 1892, 8 and 135 pp., 33 pls.

————Beschrijving van de Boeddhistische oubwwerken te Moeara Takoes. *Tijdschr. Ind. Taal-Land-Volk*, vol. xxxv, 1891, pp. 48-74, 6 pls.

————Dwars door Sumatra, voordracht gehouden te Batavia. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (no. 82-89).

ILCKEN, J.—Een keerpunt in de Gouvernements-koffiecultuur. *Vragen d. tijds*, vol. xvii, 1891, pp.169-179.

————Iets over den waaterstaat in Nederlandsch-Indië. *Vragen des tijds*, vol. xvii, 1891, pp. 411-422.

ISMAIL, B.—'Abd-el-Muttalib el-Asi. [8 pamphlets on religious subjects.] 4to, *Bûlâq*, 1308. [Concerns Java.]

JACOBS, JULIUS.—De Badoeis. *Intern. Arch. Ethnogr.* vol. iv, 1891, pp. 158-164, pl. xiii.

JACOBS, J. R.—Uit het Indische soldatenleven. *Elzevier's geïll. maandschr.*, 1892, pp. 252-282.

JANSE, J. M.—Het voorkomen van bacteriën in suikerriet. *Med. Lands Plantentuin*, ix, *Batavia*, 1891, 1 pl.

JENTINCK, F. A.—On *Lepus netscheri* Schlegel; *Felis megalotis*, Müller; and *Anoa santeng*, Dubois. *Notes Leyden Mus.* vol. xiii, pp. 217-222. [Notices sub-fossil skulls of *Anoa* from Java.]

————Some additions to the Mammalian Fauna of Billiton. *Notes Leyden Mus.* vol. xiii, pp. 207-209. [List of species known from Billiton.]

————Letter on *Pithechir melanurus. Proc. Zool. Soc.* 1892, p. 2.

JOEST, W.—Malayische Lieder und Tänze aus Ambon und den Uliase (Molukken). *Intern. Arch. Ethnogr.* vol. v, 1892, pp. 1-34.

JUNNIS,——Een dag op de vloot voor Atjeh. *Elsevier's geïll. maandschr.*, 1891, pp. 615-625.

KAN, C. M.—De litteratuur van Nederlandsch-Indië sedert Juli 1890. *Tijdschr. Ned. Aard. Genootsch.* vol. viii, 1891, pp. 665-681.

KARSTEN, G.—Ueber die Mangrove-vegetation im Malayischen Archipel. *Bibl. Botanica* (Cassel) 1891, Heft 22; vi, 72 pp., 11pls.

KEMPEES, J. K.—De heer De Bordes over spoorwegexploitatie op Java. *Ind. Gids*, xiii, 1891, pp. 1605-1610.

KERN, H.—Eene oudheidkundige kaart van Java. *Tijdschr. Ned. Aard. Genootsch.* ser. 2, vol. viii, 1892, pp. 863-865.

———Opmerkingen over 't Galelareesch naar aanleiding der beknopte spraakkunst van M. J. van Baarda. *Bijdr. Taal-Land-Volk. N. I.* vol. xl, 1891, pp. 493-531; xli, 1892, pp. 115-139.

KERN,—,—*vide* G. A. Wilken.

KERN, H.—Sawuneesche bijdragen. Volzinnen, samenspraken en woordenlijst, met een grammatische inleiding. *Bijdr. Taal-Land-Volk. N. I.* vol. vii, 1892, pp. 157-197.

KESTEREN, C. E. VAN.—Een nalezing van begrootingdiscussiën. *Ind. Gids*, xiv, 1892, pp. 43-105.

———Waarschuwingen voor den Java-oorlog, *Ind. Gids*, xiv, 1892, pp. 973-1011.

———De Indische Gids. Staat- en Letterkundig Maandschrift. [Monthly Journal; the principal papers in which are here inserted under their respective authors: much other information concerning trade and other subjects will be found therein.]

KEYMEULEN, L. VAN.—Multatuli. *Rev. Deux Mondes*, 15 April, 1892.

KIELSTRA, E. B.—Sumatra's westkust in 1841-1849. *Bijdr. Taal-Land-Volk N. I.* vol. xl, 1891, pp. 385-463; 531-612.

———Sumatra's westkust sedert 1850. *Bijdr. Taal-Land-Volk N. I.* vol. vii, 1892, pp. 254-331.

———De heerendiensten in de Lampongsche districten. *Vrag. d. Tijds*, vol. xvii, 1891, pp. 267-283.

———Kolonisatie in onze Oost. *Tijdspiegel*, 1891, pp. 43-55.

———De Lampongs in 1850, 1851. *Ind. Gids*, xiv, 1892, pp. 778-785.

———Het Indische Pupillencorps. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (no. 104-111).

————De ondergang van het Palembangsche rijk. *De Gids*, 1892, pp. 76-111.

————Indische ambtenaren. *Ind. Tolk, Nieuws v. d. Dag.* 1891, (nos. 99-103).

————De ondergang van het Bandjermasinsche Rijk, V. *Ind. Gids*, xiii, 1891, pp. 1360-1386.

————*Ibid.* VI. *Ibid.* pp. 1709-1731.

————*Ibid.* VII. *Ibid.* pp. 2191-2211.

————*Ibid.* VIII. *Ind. Gids*, xiv, 1892, pp. 11-42.

————*Ibid.* IX. *Ibid.* pp. 205-217.

KLONTJE, A. De militaire school te Meester-Cornelis. *Eigen Haard*, 1892, pp. 26-30.

KNEBEL, J.—Eenige aanteekeningen op Poerwâ-lelânâ. i, *Ind. Gids*, xiv, 1892, pp. 136-138.

————*Ibid.* ii, *Ibid.* pp. 718-721.

KNOOP, W. J.—Iets over Herman Willem Daendels. *Tijdspiegel*, 1891, pp. 1-17; 119-141; 229-253.

KOHLBRUGGE, J. H. F.—Versuch einer Anatomie des genus Hylobates. *Weber's Zool. Ergeb.* vol. ii, H. 1, 1891, pp.

KOOREVAAR, M. P.—Een vastere vorm van grondbezit voor de inlanders op Java, zonder conversie in erfelijk individueel. bezit. *Ind. Gids.* xiii. 1891, pp. 2173-2190.

KOPPEN, H.—De militaire correspondent. Ned.-Indisch leger Handleiding voor allen, die belast zijn met het voeren van correspondentie en het opmaken van requesten, rapporten, processen klachten verbaal en marsch-orders. 8vo. *Brda*, 1891, 4 and 107 pp.

KREEMER, J.—Uit het verslag (over de Zending te Kendal-pajak). *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 82-108.

————Hoe de Javaan zijne zieken verzorgt. *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 1-16.

————Nog eens: Indische Land en Volkenkunde. Pandjilaras, *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 205-212.

————Onze heerschappij over Java en de aloude Javaansche profetiën. *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 101-109.

Kreemer,—Jaarverslag [over Kendal-pajak]. *Med. Ned. Zendel.* vol, xxxv 1891, pp. 293-308.

Kruger, W.—Vorläufige Mittheilungen über die Serehkrankheit des Zuckerrohrs (Rotz Bacteriosis). *Ber. Versuchsstation Zuck. W. Java*, vol. i, pt. 1, 1890.

————Berichte der Versuchsstation für Zuckerrohr in West Java. Kagok-Tegal. 8vo. *Dresden*, Heft 1, 1890, 179 pp. 11 pls.

Kruijt, H. C.—Bezoekreis op het plateau van Deli (Karo-land). *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 309-441, maps.

Kruijt, J.—Staat van de gemeenten, de schoolen ed de ziekenpractijk, in den werkkring Modjo-warno, over 1890. *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 285-293.

————Verslag omtrent den werkkring Modjo-warno over het jaar 1890. *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 265-285.

Kuneman, Julius.—Een koffiepraatje. Een repliek en nog iets. *Ind. Gids*, xiv, 1892, pp. 468-497.

L*.—De marine-commissie voor Oost-Indië. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (Nos. 99-103).

Laats, H. J.—Over het nut der veranderingen, die gedurende den laatsten tijd in de organisatie van het inlandsch onderwijs zijn gebracht. *Ind. Gids*, xiv, 1892, pp. 1-10.

Lamington [Lord].—Journey through the Trans-Salwin Shan States to Tong-King. *Pros. Geogr. Soc. London*, vol. xiii, 1891, pp. 701-722.

————A Journey in Indo-China. *Scottish Geograph. Mag.* March 1892, pp. 121-135.

Lawick van Pabst, P. van.—Verzameling van Maleische woorden en uitdruikkingen die in den omgang met den niet-Europeeschen militair te pas komen te Bundel, Recruteschool en Bajonetvechten. ed. 2. 8vo. *Samarang*. 1891. 20 pp.

——————Het Indische Pupillencorps. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (Nos.108-111).

Leersum P. van.—Over de verdeeling der alkaloiden in den wortelbast van Cinchona Ledgeriana. *Nat. Tijd. Ned. Ind.* vol. 1, 1891, pp. 38-44.

——————Over den invloed van licht en shaduw op het alkaloidgehalte van kinabast. *Nat. Tijd. Ned. Ind.* vol. 1, 1891, pp. 525-540.

Lens, C.; J. P. G. Kruijt, and J. N. van den Broeck.—Maleische Brieven van Sumatra. Noord-Oost en Oostkust. 4to. *Delft*, 1891.

Leuchtfeuer.—Verzeichniss der Leuchtfeuer und Nebelsignalstationen aller Meere. Heft 7. Indischer Ocean und Ostindischer Archipel. 4to, *Berlin* (Hydrogr. Amt. des Reichs-Marine-Amts), 1891, vi. 104 pp.

Lenduger-Fortmorel, G.—Diatomées de la Malaisie. *Ann. Jard. Bot. Buitenzorg*, vol. xi, 1892, pp. 1-60, 7 pls.

Levyssohn-Norman, H. D.—Guillaume Louis Baud. *Eigen Haard*, 1891, pp. 694-697.

Lewis, George.—On new species of Histeridæ. *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, 1891, pp. 380. [*Apobletes semperi*; *A. platysomoides*; *A. corticalis*; *Platysoma solitarium*; *Carcinops dulcis*; *Triballus corylophioides*; *Trypeticus obeliscus*; *T. minutulus*.]

——————*Ibid.* vol. ix, 1892, pp. 341. [*Platysoma jejunum*; *Cylistix asiatica*; *C. orientalis*; *Hister famulus*; *Notodoma solstitiale*; *N. rufulum*: *Triballus opimus; Trypeticus prevdaceus.*]

Lidth de Jened, T. W. —List of reptiles brought from Siam by Mr. R. C. Keun. *Notes Leyden Mus.* vol xiii, 1891, pp. 255, 256.

Limburg-Stirum, O. J. H. van.—Javaansche raadsels. *Tijdschar. Ind. Taal-Land-Volk.* vol. xxxiv, 1891, p. 364.

Lister, Martin.—Malay Law in Negri Sembilan. *Journ. Straits Br. R. A. S.* No. 22, 1891, pp. 299-319.

————Trade in the Malay Peninsula. *Nineteenth Century*, Dec. 1891.

Lith, P. A. van der.—Het Noord-Borneo tractaal. *De Gids*, 1891, pp. 444-479.

Lonter, J. de.—De opheffing der Indische Kweek-school te Leiden. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (No. 82-89).

Low, Brooke.—The natives of Borneo:—edited by H. Ling Roth. *Journ. Anthrop. Inst. G. Britain*, vol. xxi, 1892, pp. 110-137.

Lubbers, A.—see Meyners d' Estrey.

"M. d' E."—Les Battaks independants. *Ann. extr. Orient*, vol. xv, 1891, pp. 339-347.

————*Bima. Ann. extr. Orient*, vol. xv, 1891, pp. 332-338.

Maa Pringga Atmadja and H. T. J. Uytterbroeck.—Huwelijksgebruiken op Bawean. *Tijdschr. Taal-Land-Volk, N. I.* vol. xxxiv, 1892, p. 533.

Man, J. G. de.—Decapoden des Indischen Archipel. *Weber's Zool. Ergeb.* vol. ii, heft 2, 1892, pp. 265-527, pls. xv-xxix.

Margadant, C. W.—Verkrachting in Kinderhuwelijk. *Recht. Ned. Ind.* vol. lvii, No. 1, 1891.

Martens, E. von.—Ueber dien Süsswasser-Mollusken des Malayischen Archipels im allgemeinen, und einen neuen Unio [U. semmelinki] aus Borneo ins besondere. *S. B. Nat. Neue Berlin*, 1891, pp. 102-112.

————Landschnecken des Indischen Archipels. *Weber's Zool. Ergeb.* vol. ii, H. 1, 1891, pp.

Martin, R. B.—Exhibition of a fire syringe from Borneo. *Journ. Anthrop. Inst.* vol. xx, 1891, p. 331.

Matthes, B. F.—De spreuken van Salomo, in het Makassaarsch vertaald. 8vo. *Amsterdam*, 1891. iv, 92 pp.

Maxwell, W. E.—The Law relating to Slavery among the Malays. *Journ. Straits B. R. A. S.* No. 22, 1891, pp. 247-297.

————The ruling family of Selangor, *Journ. Straits B. R. A. S.* No. 22, 1891, pp. 321-324.

————Raji Haji. *Journ. Straits Br. R. A. S.* No. 22, 1891, pp. 173-224.

————The Malay Peninsula. *Journ R. Colon. Inst.*, Dec. 1891.

MAYER, E.—Bilder aus den Sunda Inseln. 1. Auf Borneo. *Deutsche Rundschau Geogr.* vol. xiv, 1891, pp. 19-24.

————1. Bilder aus den Sunda-Inseln. 2. Vom Gouv. Genl. Daendels. 3. Versumpfen der Sunda-See. *Deutsche Rundschau Geogr.* vol. xiv, 1892, pp. 295-307.

MEERBURG, J. W.—Lijst van eenige woorden der Manggaraische Taal. *Tijdchr. Ind. Taal-Land-Volk.*, vol. xxxv, 1891, pp. 75-109.

MEERWALDT, J. A.—Wijzen de tegenwoordige zeden en gewoonten der Bataks nog sporen aan van een oorspronkelijk matriarchaat? *Tijdr. Taal-land-Volk. N. I.*, vol. vii, 1892, pp. 197-208.

MEIJER, J. J.—Een kleine soort koe op Java. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (No. 82-89).

————Tjarita Ki-Asdoera. Het verhaal van Ki-Asdoera. *Tijdr. Taal-land-Volk. N. I.* vol. xl, 1891, pp. 347-385.

MESZGER, EM.—Europäische Ansiedler in Niederländisch Ost-Indiën. 8vo. *Hamburg*, 1892, 26 pp.

MEURS, J. VAN.—Pesemah Oeloe manna op het eiland Sumatra. *Stud. Godsd. Wet. Lett. Gebied*, xxxvi, 1891.

MEYER, A. B. and A. SCHADENBERG.—Album von Philippinentypen. Nord-Luzon Negritos, Tingianen, Banaos, Ginaanen Silipanen, Calingas, Apoyáos, Kianganen, Igorroten, und Flocanen. 4to. *Dresden*, 1891, 19 pp., 600 figs. and 50 photographic pls.

MEYNERS d' ESTREY, H.—Les connaissances astronomiques des Dayaks. *C. R. Soc. geogr. Paris*, 1891, p. 460.

————Dr. A. Lubbers. Contribution à l' Anthropologie des Atjehs. *Rev. Méd Indes Néerland*, vol. xxx, 1890.

————Gouverneur d' Atjeh. Note sur l'origine du peuple d' Atjéh. *Rev. Méd. Indes Néerland*, vol. xxx, 1890, pp. 102-107.

————Les Kalangs de Java. *Rev. Sci. (Rose)*, vol. xlix, 1891, pp. 46-49.

————Nord Bornéo Britannique. *Rev. geogr.*, vol. xv, 1891, pp. 241-248.

MEYNIARD, C. L.—Le second empire en Indo-Chine, (Siam, Cambodge, Annam). 8vo. *Paris*, 1891, xviii, 508 pp.

MODIGLIANI, E.—Il lago Toba e il paese dei Batacchi nell' isola di Sumatra. *Boll. Soc. geogr. Ital.*, ser 3, vol. iv, 1891, pp. 201-226.

————Fra i Batacchi indipendenti. *Boll. Soc. geogr. Ital.*, ser. 3, vol. iv, 1891, pp, 367-384.

————Tra il lago di Toba e Bandar Pulo. *Boll. Soc. geogr. Ital.* ser. 3, vol. iv, 1891, pp. 585-606; 633-664. pl.

MOELLENDORFF, O. VAN.—Beitrag zur Fauna der Philippinen. vii. Die Insel Séquijor. *Nachr. Malac. Ges.*, 1891, pp. 37-58.

————Kritische Bemerkungen zu Hildago's Bearbeitung der Philippinischen Landschnecken. *Nachr. Malac. Ges.* 1891, pp. 113-125.

————On the land and fresh water shells of Perak. *Proc. Zool. Soc.*, 1891, pp. 330-348, pl. xxx. [*Ennea subcylindrica; Lamprocystis malayana*; *L. conulina; Hypselostoma hungerfordianum*; *Diplommatina ventriculus; D. diminuta.*]

MOORE, F.—Descriptions of some new species of Asiatic Saturniidae. *Ann. Mag. Nat. Hist.* ser. 6. vol. iv, 1892, pp. 448-453. *Antheraea borneensis; A. ridleyi*; *A. surakarta*, n. sp.

MOREN, H. H.—Leesboekje (Geschiedkundig gedeelte) voor de leerlingen der lagere schoolen in Nederlandsch Oost-Indië. ed. 4, 8vo, *Batavia*, 1891, 23 pp.

MUHAMMED ZEN B. GALAL-EDDIN.—Bidâjet-el-hidâja. [Commentary on dogmas of the Senûsi.] 4to, *Bûlâg;* 1308, 61 pp. [Concerns Java.]

MULLER, A *et alii.*—Orientalische Bibliographie. 8vo. *Berlin*, vol. v, 1891; vol. vi, 1892.

MULLER, J. J. A.—De triangulatie van Sumatra. *Tijdschr. Ned. Aard. Genootsch.* vol. ix, 1892, pp. 1-33, 3 maps.

MULTATULI.—Gedachtenis aan Multatuli. 1887-19 Februari, 1892. Uitg. door "*de Dageraad.*" 8vo. *Amsterdam*, 1892, 167 pp., portret.

————Ter gedachtenis, 1887-1902, 8vo. *Amsterdam* (*De Dageraad*), 1892, 167 pp.; *Rev. Deux Mondes*, Avril 15, 1892, pp. 791-819 (L. V. Keymeulen).

————Brieven. Bijdragen tot de kennis van zijn leven. Douwes Dekker geb. Hamminck Schepel. Zedul: Eerste periode tot 1846. 8vo. *Amsterdam*, 1891, 361 pp.

————*Ibid.* 4e deel. Vervolg eerste periode 1846-1859. *Ibid.* 1891, 212 pp.

————*Ibid.*—5e deel. Minnebrieven tijd 1861. *Ibid*, 1892, 151 pp.

NASSAU, H. J.—Nederlandsch-Indië en andere koloniën, in verband en samenhang met de algemeene en vaderlandsche geschiedenis. 4e druk. 8vo. *Groningen*, 1891, 8 and 147 pp.

NERE, E. K. A. DE.—Belez en verdediging van de Nederlandsche versterking te Samalangan van den 5den tot den 14den September, 1882, *Ind. Gids*, xiv, 1892, pp. 753-777.

————Indische legerbelangen. 8vo. *'s Hage*, 1891, 8 and 120 pp.

NEWSPAPERS, &c.—For list of those having reference to Malaya see "Orientalische Bibliographie," 1890, pp, 98, 99. See under Müller.

NEWSPAPER.—Aankondiginsblad voor Nederlandsch-Indië. 4to. *Rotterdam*, 1891 (weekly, gratis).

NIERMEYER, J. F.—De bevolking der voornaamste plaatsen van Java. *Tijdschr. Ned. Aard Genootsch.* vol. viii, 1891, pp. 947-953.

NIJLAND, E.—Toelichting bij le Zendingskaart, etc. 8vo. *Utrecht*, 1891, 16 pp.

NIJLAND, J. C. C.—Het Maleisch in de Kazerne. Beschouwingen naar aanleiding van de Handleiding "Het Maleisch in de Kazerne" door M. C. v Rouveroy van Nieuwal. *Ind. Milit. Tijdschr.* 1891, pp. 544-548.

NIKS, J. F.—Het eiland Rotti (Rote). *Ned. Zendingsts.* vol. iii, 1891, pp. 321-344.

OHL, A. E. U. W.—Eene waterstudie. 8vo. *Batavia*, 1891, 97 pp.

ONDEMANS, J. A. C.—Die Triangulation von Java ausgeführt von personal des geographischen Dienstes in Nederländisch-Ost-Indien. 3 Abth. Ergänzungen zu den beiden ersten abtheilungen. Genaue Bestimmung des Basisnetz vom Simplak. Die Basismessungen bei Logantong und bei Tangsil, sowie die beiden dazu gehörenden Basisnetz. 4to. *Haag*. 4, 4 and 180 pp., pls. 7-15.

OTTOW, W. A.—Scheikundige onderzoekingen over Daon maniran (Phyllanthus niruri, Linn.). *Geneesk. Tijdschr. N. I.*, vol. xxxi, 1891.

"P., F. V. D."—Het Nederlandsch gezag over Java. *De Gids*, 1892, pp. 368-377.

PAULY, A. W. DE.—Art. 17, no. 3, der Wet betrekkelijk de Nationale Militie (Wet van 1 Mei 1863, 8 vol. 44). 8vo, *Leiden*, 1892.

PENNINK, H. C.—Verslag van de diffusieproef gehouden te Klaling van 5 tot en met 11 Augustus 1891 en vergelijking der resultaten van riet diffusie contra molenarbeid, ter beoordeling der rentabiliteit, van vervanging der laatste door de eerste. 8vo, *Soerabaia*, 1892, 45 pp., pl.

PERELAER, M. T. H.—A travers Bornéo. Aventures de quatre déserteurs de l' armée Indo-Néerlandaise. (Transl. from Meyner's d' Estrey.) 8vo, *Paris*, 1891, vi, 336 pp.

PERIE, A.—Souvenirs de Malaisie. Onze ans sous l' équateur. Indo-Chine. ed. 4, 8vo, *Cahors*, 1891, xiii, 324 pp.

PETIT, L. D. - Overzicht der Koloniale Literatuur. *Ind. Gids*, (throughout).

PIEPERS, M. C.—Observations sur des vols de lépidoptères aux Indes Orientales Néerlandaises, et considérations sur la Nature probable de ce phénomène *Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 198-257.

PILSBRY, H. A.—Tryon's Manual of Conchology. Ser. 2, vol. vii, *Helicidæ*, vols. iv and v.). 8vo, *Philadelphia*, 1891.

PLEYTE, C. M.—Indonesische oudheden. I: Een oude gendi van Huta Dolok. *Intern. Arch. Ethnogr.*, vol. iv, 1891, pp. 166.

PLEYTE, WZN., C. M.—Zur kenntnis der religiosen Anschauungen der Bataks. *Globus*, vol. lx, 1891, pp. 289-291; 310-313.

——————Sumpitan and bow in Indonesia. *Intern. Arch. Ethnogr.* vol. iv, 1891, pp. 265-281, pls. xviii-xxi.

——————De geographische verbreiding van het Koppensnellen in den Oost-Indischen Archipel. *Tijdschr. Ned. Aard. Genootsch.* vol. viii, 1891, pp. 908-947.

——————Critische overzichten. Westermarck's History of human marriage. *Ind. Gids*, xiii, 1891, pp. 2045-2051.

POESEN, C.—De zending en het leven des gebeds op Java. 8vo, *'s Gravenhage*, 1891, 26 pp.

POST, J. W.—Le chemin de fer à crémaillière à Sumatra. 8vo, *La Haye*, 1892.

PRELL, A.—Atjih und die Holländer. *Ausland*, 1892, pp. 233-238.

QUARLES VAN UFFORD, J. K. W.—Koloniale kroniek. Koloniale litteratuur. *De Economist*, 1891, pp. 720-740.

QUARLES VAN UFFORD, J. K. W. and J. AALTSZ.—Bawean. *Tijdschr. Ned. Aard. Genootsch.* vol. ix, 1892, pp. 33-49, map.

RAJAL Y LARRE, J.—Memoria acerca de la provincia de Nueva Ecija en Filipinas. 4to, *Madrid*, 1891, 74 pp.

REES, O. VAN.—Ter Herinnering. *Ind. Gids*, xiv, 1892, pp. 722, 723.

RETGERS, J. W.—Mikroskopisch onderzoek eener verzameling gesteenten uit de afdeeling Martapoera, zuider- en ooster-afdeeling van Borneo. *Jaarb. Mijn. Ned. O. I.*, vol. xx (*Wet. Ged.: Verh.*), 1891, pp. 1-212.

REUMPEL, H. C. O.—Het Indische Pupillencorps. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (nos. 404-111).

"REVEILLERE" [=P. BRAND].—Le Haut-Mékong ou le Laos ouvert. ed. 3. 8vo, *Paris*, 1891, 88 pp., maps.

RICARD.—Les Hollandais dans [les Indes Néerlandaises]. *Rev. Sci.* 19 May, 1891.

RICHARD, J. and R. MONIEZ.—Entomostracés d'eau douce de Sumatra et de Célèbes. Phyllopodes, Cladocères, Copepodes, et Ostracodes, *Weber's. Zool. Ergeb.* vol. ii, H. 1, 1891, pp.

RIEDEL, J. G. F.—Le isole Roti o Rotti et i loro abitanti. *Cosmos* (Torino), vol. x, 1891, pp. 306-313.

RINNOOY, N.—Nog eens: Het Buiten-Huwelijk. *Ned Zendingsts.* vol. iii, 1891, pp. 358-364.

ROCHE DRAGON, L. B.—Borneo (Sarawak). *Bull. Soc. Géogr. Lyon*, vol. x, 1891, pp. 381-385.

ROMUNDE, R. VAN.—Verslag omtrent de Gouvernements Kinaonderneming in de Preanger-Regentschappen over het jaar 1889. *Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 124-165.

ROV, L. W. G. DE.—De verkoop van Opium op Java. [addressed to Dr. H. J. A. M. Schaepman]. 8vo, *Nijmegen*, 1892. Reviewed in *Ind. Gids*, xiv, 1892, pp. 1084-1131.

ROO VAN ALDERWERELT, J. *de*.—Soendaneesch-hollandsche woordenlijst met een schets eener Grammatica. *Tijdschr. Ind. Taal-Land-Volk*, vol. xxxiv, 1891.

ROOKER, H.—Bericht nopens den voortgang der Evangelisatie in de Minahassa over 1889. *Med. Ned. Zendel.*, vol. xxxv, 1891, pp. 148-170.

————Statistieke opgaven betrekkelijk het zielental in de christelijke gemeenten in de Minahassa op ultimo 1889. *Med. Ned. Zendel.*, vol. xxxv, 1891, pp. 170-190.

————Statistieke opgaven van het aantaal gedoopte volwassenen en kinderen, aangenomen lidmaten en ingezegende huwelijken in de Minahassa, gedurende het jaar 1889. *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 190-199.

————Staat der Genootschapsscholen in de Minahassa op ultimo December 1889. *Med. Ned. Zendel.*, vol. xxxv, 1891, pp. 199-205.

ROSSET, C. W.—Fischreichtum, Fischfang, Fischbereitung und Fischersitten in Hinter Indien. *Ausland*, no. 27, 1891, pp. 524-529.

Rouveroy van Nieuwal, M. C. van.—De postduif in dienst van den oorlog en van den vrede. 8vo, *Samarang*, 1891, 3 pls.

Roessingh van Iterson, J. G.—Nog weder eens de Indische comptabiliteit. *Ind. Gids*, xiii, 1891, pp. 1611-1633.

Sandick, R. A. van.—De crisis der tabaksondernemingen in Deli. *Vrag. v. d. Dag*, vol. vii, 1892, pp. 81-94.

————Het beheer der bevloeiingen op Java. *Ind. Tolk, Nieuws v. d. Dag*, 1891. (no. 91-98).

————Onze aanstaande spoorwegpolitiek in Indië. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (nos. 108-111).

————Een Fransch oordeel over onze Koloniën. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (no. 104-107).

————Het laatste hoofdstuk van de Ombiliën-quaestie. *Ind. Gids*, xiv, 1892, pp. 786-791.

Schepman, M. M.—On three Eastern Molluscs. *Notes Leyden Mus.* vol. xiii, 1891, pp. 155-157. [*Nassa Javanica.*]

Schimper, A. F. W.—Die Indo-Malayische Strandflora. *Jena*, 1891, , map and figures.

————Die indomalaiische Strandflora. *Botan. Mitth. Tropen*, Heft 3, 1891, (204 pp.)

Schippers, M. H.—Herinneringen uit mijn vorigen werkkring, te Maoembi, in de Minahassa. *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 131-148.

Schegel, G.—Un calendrie indonésien-chinois. (Tjoe Toei Yang]. *T'oung Pao*, vol. ii, 1891, pp. 175-177.

————Chinese-Malay and Javanese Literature in Java. *T'oung Pao*, vol. ii, 1891, pp. 148-151.

Schmeltz, J. D. E.—Hinduistische Alterthümer auf Java. *Intern. Arch. Ethnogr.* vol. iv, 1891, p. 288.

Schmidt, B. T. C. F.—Zakboekje voor den Nederlandch-Indischen officier te velde. 8vo, *Batavia*, 1892, 32 and 304 pp., fig.

Schoch, C. F.—De heerendiensten op Java en Madura volgens het Regeerings-Reglement van 1854. 8vo. *'s Gravenhage* 1891, viii, 281 pp.

SCHOEMAKER, J. P.—Hikayat prang di Edi pada boelan mei 1889, terdjoempoel dari pada hikayat prang di Atjeh. Terkarang pada behasa Olanda dan tersalin di dalam behasa Melajoe-rendah. 8vo. *Batavia*, 1891, 56 pp.

————Tjerita-tjerita dari negri Atjeh. Di salinken oleh H. Aars. 8vo, *Batavia*, 1892, 2 and 73 pp.

SCHOT, J. G.—Ons Overzeesch bezit en de sociale quaestie. Sociaaleconomische lezing. 8vo, *Amsterdam*, 1891, 39 pp.

————Eenige oude rechtgewoonten in de XX Kota; adat mamak kamanakan. *Ind. Tolk*, *Nieuws v. d. Dag*, 1891, (no. 82-89.)

————Eenige oude rechtgewoonten in XX Kota, "De adat mendirikan panghoeloe." *Ind. Tolk*, *Nieuws v d. Dag*, 1891 (no. 82-89.).

————De gronden op Sumatra's Westkust. *Ind. Tolk*, *Nieuws v. d Dag*, 1891 (no. 91-98).

SCHUURMANS. N. D.—Anti-Opiummiddel. *Ned. Zendingsts.* vol. iii, 1891, pp. 124-127.

SCHUSSLER, K. H.—De tarieven der Staatsspoorwegen op Java en de verhouding van die spoorwegen tot de Nederlandsch-Indische spoorweg-maatschappij. *Ind. Gids*, xiv, 1892, pp. 565-600.

SEIDEL, A.—Praktische Grammatik der Malayischen Sprache für den selbstunterricht. 8vo, *Wien*, [1891], x, 176 pp.

SEIDEL, H.—Neue französische Forschungen in Hinter-Indiën. *Globus*, vol. lxi, 1892, pp. 132-135, map.

SEMPER, GEORG.—Die Tagfalter *(Rhopalocera)*. *Semper's Reisen Philippinen*, vol. v, lief. 6, 1891, pp. 239-270, 8 pls.

SERRURIER, L.—De Pionier. Handleiding over het verzamelen en waarnemen op natuurkundig gebied, inzonderheid in tropische gewesten. 8vo, *Leiden*, 1891, iv, 178 pp.

————Poignards de Bornéo? (Réponse). *Intern. Arch. Ethnogr.* vol. iv, 1891, p. 167.

SHARPE, R. BOWDLER.—Description of a new species of *Calyptomena* from North Western Borneo. *Ann. Mag. Nat. Hist.* ser. 6, vol. ix, 1892, p. 249. [*C. hosii.*]

SHERBORN, C. DAVIES.—A bibliography of Malaya; from Jan. 1888 to June 1890. *Journ. Straits Br. R. A. S.*, no. 22, 1891. pp. 349-428.

————A bibliography of Malaya, from July 1890 to June 1891. *Journ. Straits Branch R. A. S.*, no. 24, 1891, pp. 119-164.

"SIJ."—De bemoeijenis des bestuurs. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (no. 82-89).

SILLEM, E.—Het zuidelijk deel onzer Batta-Zending. De Rijnsche Zending. *Tijdschrift*, 1892, pp. 36-53.

SLUITER, C. P.—Über die Bildung der Kalkröhren von *Gastrochæna. Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 45-60.

————Die Evertebraten aus der Sammlung des königlichen naturwissenschaftlichen Vereins in Niederlandsch Indiën in Batavia. III. Die Gephyreen. *Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 102-123.

————Die Evertebraten; etc.—Ascidiae simplicis. *Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 329-348, 2 pls.

SLUYS, P. J. A.—Over acclimatatie. *Ind. Gids*, xiv, 1892, pp. 601-632.

SPAAN, A.—De ambtenaren op Java en Madoera en op de Buitenbezittingen. *Ind. Tolk, Nieuws v. d. Dag*, 1891 (no. 82-89).

STEERE, J. B.—Ornithological Results of an expedition to the Philippine Islands in 1887 and 1888. *Ibis*, 1891, pp. 301-316, pls. vii, viii.

STELLWAGEN, A. W.—Naar anleiding van Jacob Massel's Plakaatboek (1 November 1750 - 14 Mei 1761). *Ind. Gids*, xiii, 1891, pp. 1557-1592.

————Naar anleiding van het Plakkaatboek van den Gouverneur-Generaal van der Parra (15 Mei 1761 - 28 Dec-1775). *Ind. Gids*, xiv, 1892, pp, 405-443.

STEPHEN, J. F.—British Indian Opium Trade. 19th.

STIBBE LZN, A. and P. DIJCKMEESTER.—Het recht in Nederlandsch-Indië. Rechtskundig Tijdschrift. 8vo, *Batavia.*

STRAITS SETTLEMENTS.—Correspondence with reference to the case of the ex-Sultan Abdullah of Perak. *London*, 1891, (Parl. Paper. H. C. Report 398), 9d.

————Further papers relating to the protected Malay States. Reports for 1890. *London*, 1892, (Parl. Paper [6576]), 1s 1½d.

————Annual Report on Trade and Finance of Straits Settlements for 1890. 8vo, *London*, 1892 (Parl Paper [6563-8]), 3d.

SUMATRA.—The Orang Ulu. *Scottish Geogr. Mag.* vol. viii, 1892, p. 97.

————Een waardeerend oordeel over den arbeid der zendelingen op Sumatra. De Rijnsche Zending. *Tijdschrift*, 1892, pp. 73-99.

SUNDERMANN, H.—Der Kultur der Niasser. *Globus*, vol. lix, 1891, pp. 369-374.

————Niassische Lailo. *Ausland*, 1891, pp. 641-646.

SWAVING, A. H.—De Koloniaal-liberalen in Nederland. 8vo, *Batavia*, 1891, 57 pp.

TAUPIN, J.—Relation d'un voyage de exploration et des études au Laos. *Bull. Soc. Normande geogr.*, 1890 (Mai-Oct.).

TEN HAVE, J. J.—Beknopte aardrijkskunde van Nederlandsch Oost- en West-Indië. ed 2. *'sGravenhage*, 1891, 96 pp.

TEN KATE, H. F. C.—Schrijven. Waringapoe, Soemba, 18 Aug. 1891; Soerabaja 9 Oct. 1891 *Tijdschr. Ned. Aard. Genootsch.* ser. 2, vol. viii, pp. 827-829 and 958.

TEN KATE.—Nouvelles du.—*L'Anthrop.* vol. ii, 1891, p. 647 (Meyners d' Estrey).

THOMAS, OLDFIELD.—On some new mammalia from the East-Indian Archipelago. *Ann. Mag. Nat. Hist.* ser. 6, vol. ix. 1892, pp. 250. [*Hemigale hosei; Tupaia everetti; T. picta; T.montana; T. melanura; Sciurus brookei; S. lowii; Tragulus nigricans.*]

THORELL, T.—Spindlar från Nikobarerna och andra delar of södra Asien till större delen insamlade under K. Danska

Korvetten Galatheas resa omkring jorden āren 1845-1847. *K. Svenska Vet. Ak. Handl.* vol. xxiv., No. 2, 1891. [Many species from Penang, Singapore, and Manila].

TIELE, C. P.—Geschiedenis van den godsdienst in de oudheid tot op Alexander d. Groote. Deel 1. 8vo. *Amsterdam*, 1891, vii, 204 pp.

TOORN, J. C. VAN DER—Minangkabausch-Maleisch-Nederlandsch woordenboek. 8vo. *'sHage*, 1891, 12 and 592 pp. K. Inst, taal. etc. N. I.)

TREACHER, W. H.—British North Borneo: Sketches of Brunei, Sarawak, Labuan, and North Borneo. *Journ. Straits Br. R. A. S.*, No. 20, 1891, pp. 13-74: No. 21, 1892, pp. 19 p 121.

TREUB, M.—Verslag omtrent den staat van 's Lands Plantentuin te Buitenzorg over het jaar 1890. 8vo. *Batavia*, 1891, 160 pp.; 3 pls.

TCHIRCH, A.—Neber Sereh, die wichtigste alle Krankheiten des Zucherrohrs in Java. *Schweizer Wochenschr. Pharm.*, 1891, No. 6. (6pp., 2pls.)

"K. V."—Een petroleum-maatschappij op Java in werking. *Ind. Gids.* xiv, 1892, pp. 345-404.

VERBECK, RENIER, D.—Het Billiton-debat in de Tweede Kamer. *Ind. Gids*, xiv, 1892, pp. 345-404.

VERBECK, R. D. M.—Vorläfiger Bericht über Nimmuliten orbitoiden und Alveolinen von Java und über das alter des gesteine im welchen sie vorkommen. *Neues Jahrbuch*, 1891. pp. 65-67.

——————Oudheden van Java. Lijst der voornaamste overblijfselen uit den Hindoe-tijd op Java met eene oudheidkundige kaart. *Verb. Batav. Genootsch. Kunst. Wet.* vol. xlvi, 1891; xviii, 338 pp., atlas.

VERSTEEG, W. F.—Het wetenschapp-lijik onderzoek in het Nederlandsch aardrijkskundig genootschap. *Tijdschr. Neder. Aard. Genootsch.* ser. 2, vol. viii, 1891, pp. 336-354.

VERWIJK, J. J.—Bijdrage tot de Kennis van den Sapoedi. Archipel. *Tijdschr. Ind. taal-land-Volk.* vol. xxxv, pt. 2, 1892, pp. 234-248, map.

————Aanteekeningen omtrent het Diënggebergte en zijn merkwaardigheden. *Tijdschr. Ind. Taal-land-Volk.* vol. xxxv, pt. 2, 1892, pp. 215-222, map.

VILLOT, A.—Gordiens de Sumatra. Description de deux espèces nouvelles. *Weber's Zool. Ergeb.* vol. ii, H. 1, 1891 pp.

VORDERMAN, A. G.—De vogels van Billiton. *Nat. Tijd. Ned. Ind.*, vol. l, 1891, pp. 411-514.

————Nog iets over het loophoen van den Kangean-Archipel, *Megapodius duperrei. Nat. Tijd. Ned. Ind.* vol. l, 1891. pp. 520-524.

————Bijdrage tot de kennis van het Billiton-Maleisch. *Tijdschr. Ind. Taal.-land-Volk.* vol. xxxiv.

————Over een vogel collectie afkomstig van Borneo. *Nat. Tijd. Ned. Ind.* vol. l, 1891, pp. 378-410.

————Over eene collectie vogels afkomstig van de Lampongs (Zuid-Sumatra). *Nat. Tijdschr. Ned. I.* vol. li, 1891, pt. 2, pp. 201-249.

————Java-vogels. *Nat. Tijdschr, Ned. I.* vol. li, pt. 4, 1891, pp. 373-416.

————Opgave van de namen der dèsa's en Kampongs waaruit de voornaamste plaatsen van Java bestaan en van het zielental dat deze bevatten. *Tijdschr. Ned. Aardr. Genostsch.* vol. viii, 1891, pp. 719-745.

VROLIK, W. K. M.—Billiton. Onuitgesproken rede. 8vo. *'sHage*, 1892, 44 pp.

"W".—Die Insel Nias. *Deutsche Rundschau Geogr.* vol. xiv. 1892, p. 320. (See J. W. Thomas, *Jahrsb. Frankfurt Ver, Geogr.* 1890, pp. 133-135.)

WALL, A. F. VON DE.—Kort begrip der beteekenis van de tarekat naar het Maleisch van Sajid Oesman ibu Abdoellah ibu akil Jahja, adviseur honorair door Arabische zaken. *Tijdschr. Ind. Taal-land-Volk.* vol. xxxv, pt. 2, 1892, pp. 223-227.

WALLACE, ALFRED RUSSELL,—Island life. ed. 2, 8vo. *London*, 1892, pp. 545, maps and plates, 6/-.

————The Malay Archipelago: The land of the Orang-Utang and the bird of Paradise. New edition. 8vo. *London*, 1892.

WARREN, W.—Descriptions of new genera and species of Pyralides, contained in the British Museum collection. *Ann. Mag. Nat. Hist.* ser. 6, vol. viii, 1891, pp. 61-70. [*Endotricha (?) stenialis; E. rufofimbrialis; E. flavifusalis*, n spp.]

————Descriptions of new genera and species of Pyralidæ contained in the British Museum collection. *Ann. Mag. Nat, Hist.* ser 6, vol. ix, 1892, p. 294. [*Glauconoe fuscescens*, n. gen. et sp.]

WEBER, Max.—Zoölogische Ergebnisse einer Reise in Niederländisch Ost. Indiën. Bd. ii, hft. 1. 8vo. *Leiden*, 1891, 264 pp.

————Beiträge zur anatomie und entwickelung des genus *Manis*. *Weber's Zool. Ergeb.*, vol. ii, H. 1, 1891, pp.

————Die süsswasser crustaceen des Indischen Archipels- nebst Bemerkungen über die süsswasser-Fauna in Allgemeinen. *Weber's Zool. Ergeb.*, vol. ii, heft 2, 1892, pp. 528, 571, pt. xxx.

WESSELS, L.—De voorstellen van de Indische regeering omtrent de Gouvernements-koffiecultuur op Java en Sumatra's west-kust. 8vo. *'sHage*, 1892, 55 pp.

————De Suikerindustrie op Java. *Ind. Gids,* xiii, 1891, pp. 1756-1770.

————Vooruitgang op Java. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (Nos. 108-111)

————De Gouvernements-koffiecultuur op Java, *Vragen des tijds*, vol. xviii, 1891, pp. 59-80.

WESTENBERG, C. J.—Wetenschap of Humbug? Geschreven naar aanleiding eener door Jules Claine op het orientalisten-congres te London gehouden lezing over eene door hem gemaakte reis in de Karo-landen. *Tijdschr. Ned. Aard. Genostsch*, vol. ix, 1892, pp. 49-70.

————Anteekeningen omtrent de godsdienstige begrippen der Karo-Bataks. *Bijdr. taal-land-Volk. N.I.* vol. vii, 1892, pp. 208-254.

WESTERMARCK, E.—The History of Human Marriage. 8vo, *London*, 1891. [Refers to Malays; v. also Wzn.]

WESTHOFF, J. P. G.—De vermoording der twee Barmer zendelingen Scheidt en Bösch op Nieuw-Guinea. De Rijnsche Zending. *Tijdschrift*, 1891, pp. 112-144.

————Koeala Kapoeas op Borneo. De Rijnsche Zending, *Tijdschrift*, 1891, pp. 149-156.

WESTHOFF.—Sipoholon op Sumatra. De Rijnsche Zending. *Tijdschrift*, 1891, pp. 156-161.

WICHMANN, A.—Bericht über eine im Jahre 1888-9 ausgeführte Reise nach den Indischen Archipel. *Tijdschr. Ned. Aard. Genootch*, vol. ix. 1892, pp. 161-277, 5 pls.

WIERSMA, J. N.—Moet het Maleisch van de scholen en uit de godsdienstprediking in the Minahassa worden geweerd? *Ned. Zendingsts*, vol. iii, 1891, pp. 223-242.

WIERSMA, C. H.—Het Buiten - Christelijk Huwelijk. *Ned. Zendingsts.* vol. iii, 1891, pp. 266-276.

WIJMA, J. and J. C. SANDER.—Bezoek aan Nederlandsch Oost- en West-Indië. 5 ed. 2 vols. 8vo. *Schiedam* 1891, 3 and 102; 4 and 107 pp.

WIJNEN, R.—De grensregeling op Borneo. *Ind Tolk*, *Nieuws v. d. Dag*, 1891 (No. 104-107).

————De grensscheiding tusschen Noord-Borneo en de Nederlandsche bezittingen. *Ind. Tolk*, *Nieuws v. d. Dag*, 1891 (Nos. 99-103).

————Ter herinnering. *Ind. Gids*, xiv, 1892, pp. 723, 724.

WIJNGAARDEN, J. K.—Verslag van mijne verrichtingen en bevindingen over het jaar 1890. *Med. Ned. Zendel.* vol. xxxv, 1891, pp. 233-268.

————Savoeneesche tijdrekening. *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 16-34.

WILKEN, G. A.—Eene nieuwe theorie van den oorsprong der offers. *De Gids*, 1891, pp. 535-573.

————Over het huwelijks- en erfrecht bij de volken van Zuid-Sumatra. Eene bijdrage tot de ontwikkelingsgeschiedenis van het familierecht. 8vo. *'s Gravenhage*, 1891, 87 pp.

————De Hagedis in het volksgeloof der Malayo-Polynesiërs *Bijdr. taal-land-Volks. N. I.* vol. vi, 1891, pp. 463-492, 2 pls.

———Handleiding voor de vergelijkende volkenkunde van Nederlandsch-Indië. uitgeg. door C. M. Pleyte-Lzn.

WILKEN, GEORGE ALEXANDER.—1847-1892.—Obituary notices appeared in *Ind. Gids*, xiii, 1891, p. 1705 (Prof. Kern); *Globus*, lx, p. 13 (J. D. E. Schmeltz); *De Gids*, 1891, pp. 168-171 (W. van der Vlugt); *T'oung Pao*, vol. ii, p. 350; *Rev. hist. rel.* vol. xxiv, pp. 399-401; *Mélus.* vol. vi, pp. 4-12 (A. Barth); *Intern. Arch. Ethnogr.* vol. iv, p. 263 (H. Kern); *Bijdr. t.-l.-V. N. I.* vol. vii, pp. 139-156, portrait (T. H. der Kinderen); *Vragen v. d. Dag*, 1891 (C. M. Pleyte Wzn.); *Tijdschr, Ned. Aard. Genootsch* vol. viii, p. 1024 (Quarles van Ufford); *Am. Ur-Quell*, vol. ii. p. 12 (J. D. E. Schmeltz); List of works of, *Journ. Anthrop. Inst. G. Britain*, vol. xxi, 1892, pp. 192-195.

WILLINCK, G. D.—De grondrechten bij de volken van den Oost-Indischen Archipel. 8vo. *'s Gravenhage*, 1891, 36 pp.

WITKAMP.—Het oordeel van Prof. Wagner over de statistische opgaven betreffende N.-I. *Ind. Gids.* xiv, 1892, pp. 444-448.

WYMA, J. and J. C. SANDER.—Bezoek aan Nederlandsch Oost- en West-Indië. Leesboek. ed. 5, 8vo. *Schiedam*, 1891, 2 plts, viii, 102, and iv, 107 pp.

"X".—Lasten der suikerindustrie op Java in verband met de McKinley-wet in Amerika. *Ind. Gids*, xiii, 1891, pp. 1644, 1645.

YZERMAN, J. W., see I. Jzerman.

ZELLE, L, J.—Les orangs-Konbons. *Bull. Soc. Anthrop. Paris*, vol. ii, 1891, pp. 25-35.

ZONDERVAN, H.—Steinkohlen und Eisenbahnen in Sumatra. *Deutsche geogr. Blatt.* vol. xiv, 1892, pp. 233-261, map.

———Fosrchungsreisen in Niederländisch-Ost-Indiën. *Ausland*, 1892, pp. 2-5, 17-20.

ZUIJLEN, G. E. V. L. VAN.—Het beleid in Atjeh. *Ind. Tolk, Nieuws v. d. Dag*, 1891, Nos. 108-111.)

———Atjeh-Pacificatie. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (No. 82-89).

———Het vervoer te water van militairen in Ned.-Indië. *Ind. Tolk, Nieuws v. d. Dag*, 1891, (No. 82-89.)

MAPS.

INDIE.—Zendingskaart van Oost- en West-Indië, 1 : 2, 300,000 : by E. Nijland. *Utrecht*, 1891, 4 sheets.

————Zendingskaart van Oost- en West-Indië. 1:2, 300,000 by E. Nijland. *Utrecht*, 1891.

MALAY PENINSULA.—Map of the, 1891, Published under the auspices of the Straits Branch of the Royal Asiatic Society. 1: 563, 900 or 7. 7 geogr. miles to 1 inch. *London*, 1891, 12/.

RIOUW EN LINGGA ARCHIPEL. Blad i.

————*Ibid.*—Blad ii. 1:250,000. *Batavia*, 1891.

SOERABAJA.—Westervaarwater van Soerabaja. Noordelijk gedeelte tot aan Tandjoeng Saoe door J. E. Phaff, 1890. Zuidelijk door H. Nijgh, 1879. 1:75,000. *Batavia*. (Hydrogr. Bureau), 1891,

SUMATRA, Bangka, en de Riouw-Lingga Archipel, kaart van . . . . . . 12 bladen, 1: 1,000,000. *Amsterdam*, 1892.

SUMATRA OOSTKUST. Mond der Deli rivier. Trigon. opgenomen door G. F. Tijdeman, 1890. 1: 40,000. *Batavia*, 1891.

SUMATRA.—Kaart van Sumatra, Bangka en de Riouw-Lingga Archipel, 1:1,000,000. By J. Dornseiffen and Z. de Geest. 12 sheets. *Amsterdam*.

————Kaart van het eiland Sumatra. 1: 300,000, By J. H. Schmüll. *Tijdschr. Ned. Aard. Genootsch.* ser. 2, vol. viii, 1892.

BOOKS PUBLISHED IN THE VERNACULAR.

BAGINDA MARADJALAN, Sja'ir nasèhat bagi sekalijan penggaway, 16mo. *Batavia* (Inst. Reg. Orient), 32 pp. [Malay characters; the same work is issued in Latin characters.]

BERBAGAI-BAGAI peladjaran daripada Elmoe Alam, terkarang oleh D. Gerth van Wijk. Tjetakan jang ka-3. Gouv. besl. dd° 15 Juli, 1890, No. 28. 8vo. *Batawi*, 1891, 89 pp.

BOEKOE MASAK-MASAKAN roepa-roepa. Mengoendjoeken bagimana bikinnja makanan tjara blanda, makanan tjara djawa, koeweeh-koeweeh tjara blanda, koeweeh-koeweeh tjara djawa, Manissan, Stroop, Likeur, dan lain Minoeman, Assinan, Atjar, en Sosijs besar kejtil, roepa-roepa. 8vo. *Djokjakarta*, 1891, 186 pp.

BOEKOE Tjerita'an Hon Se Yoe tempoe keizer Tong Hian Tjong merk "Taij Tong Tiauw." 8vo. *Betawi*, 1891, pp. 1-560.

BOEKOE tjerita'an dahoeloe kala di negri Tjina tersalin dari Tjerita Gak Hoeij Tempo Hongtee Hwi Tjong merk Taij Song Tiauw. 8vo. *Batavia*, 1891, pp. 1-960.

DAFTAR goedang kitab Goebernemen di Betawi tahun 1892. Djilid i. 8vo. *Batavia*, 1891, 32 pp.

HIKAJAT 1001 malam ja-itoe tjeritera-tjeritera Arab, disalin kapada behasa Melajoe oleh toean Gijsbert Francis, Redacteur dari soerat kabar "Pembrita Betawi" dengan menoeroet karangan toean Gerard Keller di dalam behasa Olanda. 8vo. *Betawi*, 1891, pp. 1-128.

HIKAJAT bibi Sabariah Geschiedenis van Tante Sabarieh, geordend ten behoeve van iedereen, die wil spreken Maleisch naar behooren door J. P. G. Kruijt. 8vo. *Delft*, 1891.

HIKAJAT Said Hamzah. I. 8vo. *Batavia* (Inst. Reg. Orient.), 1891, 100 pp.

HIKAJAT Kalila dan Damina, tersalin daripada nasehat Malajoe, dengan titah Goupernemen Hindija Nederlanda oleh J. R. P. F. Cronggrijp. 8vo *Leiden*, 1892, 60 and 393 pp.

INTJE NANGGONG, Makassaarsch verhaal van J. Koekang. 8vo. *Batavia*, 1891.

Ini tjarita namanja Lawah-Lawah merah ija itoe satoe Tjarita dari negri Tjina. 8vo. *Betawi*, 1891, pp. 1-316.

MELAJOE BETAWI. Kitab darihal perkataan-perkataan Melajoe, hal memetjah oedjar-oedjar Melajoe dan hal pernakkan tanda-tanda batja dan hoeroef-hoeroef besar. Dikarang oleh Lie Kim Hok. 8vo. *Betawi*, 1891, 116 pp.

OEIJ PENG LONG, Boekoe sair roepa-roepa seperti Sair orang Bersobat, Sari Nona Boedjang dan Sair segala Boea-boehan. 8vo. *Batavia*, 1891, 80 pp.

PAWOEKON. Serat Pawoekon katedakkan Saking karaton Soerakarta. 8vo. *Semarang*, 1890, 92 pp.

PERATOERAN BAROE dari hal membikin dan merombak roemah-roemah dan sebageinja di dalam afdeeling kota dan kota kota moeka. Betawi, dan pada iboe-iboe kota dari afdeeling Bogor, Meester-Cornelis dan Tangerang, Besluit padoeka toean Resident Betawi tanggal 10 Maart 1891. 8vo. *Batavia* 1891, 16 pp.

PERDJANDJIAN dari Pemborongan hal Pemasoekan dari Pakerdja'an aken goenanja Bagian Perang (Depart. van Oorlog) di tanah India Nederland jang masoek bagiannja melitaire administratie. 8vo. *Soerabaia*, 1890, iv, 110 pp.

PEWARTA-BOEMI. Tjonto jang pertama. Hari Reboe 22 April, 1891. Jang mengarang dan mengaloewarkan soerat chabar ini, Y. Strickwerda. fo. *Amsterdam*, 1891, 4 pp.

PRIJAMANAH.—Tjitrawarna. Indische Schetsen naar de natuur geteekend. *Eigen-Haard*, 1891, pt. 458, 470, 494, 510.

————Soedarsâ [Indisch novelle.] 8vo. *Haarlem*, 1891, 174 pp.

RANGGA KARTA WINATA (Raden). Pagoenéman Soenda djeung Walanda, sarta piwoeroekna teewan K. F. Holle. 8vo. *Batavia*, 1891, 216 pp.

RODJA MELATI ja-itoe boekoe pantoen roepa-roepa jang terpilih amat bagoesnja oleh dikarang Si Nonah Boto. I. 8vo. *Batavia*, 1891, 69 pp.

SALIMAN dari pada Boekoe Ondang-Ondang (Burgerlijk Wetboek) sebrapa jang terpakei pada orang-orang Asing di Hindia Olanda. 8vo. *Betawi*, 1891, iv, 128 pp.

SOERAT niau wassa be marariabaisi niau na aniosepai Windessi. 8vo. *Utrecht*, 1891.

SOESOELAN, jang Pertama pada Soerat kandoegan boeat-goenanja Priajie-priajie jang memegang pakerdjaän di tanah Gouvernemennan die Poelo Djawa dan Madoera, terkoempoel oleh L. T. Mayer. 8vo. *Samarang*, 1891, 8, 124, xiii pp.

TAN TENG KIE, Sair dari hal datengnja Poetra Makoeba keradjaän Boes di Betawi, dan pegihnja, tersamboeng dengan Sair Sekalian Binatang di Hoetan, akan mengingetin anak-anak, soepaja mendengar kata, dan sajang kepada harta banda. 8vo. *Betawi*, 1891, 28 pp.

TJERITA Aboe Nawas dengan Radja Haroenarrasid di negri Bagdad. 8vo. *Batavia*, 1891, 102 pp.

Woelang Rèh, Téko-werdi en Soeloek. 8vo. *Batavia*, 1891. [Javanese characters.]

[No. 27.]

JOURNAL
OF THE
STRAITS BRANCH
OF THE
Royal Asiatic Society

OCTOBER, 1894.

Agents of the Society:

London and America	TRUBNER & Co.
Paris	ERNEST LEROUX & CIE.
Germany ...	K. F. KOEHLER'S ANTIQUARIUM, Leipzig.

SINGAPORE:
PRINTED AT THE AMERICAN MISSION PRESS.

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THE

STRAITS BRANCH

OF THE

ROYAL ASIATIC SOCIETY.

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The Hon. W. E. Maxwell—*Vice-President for Singapore.*

Mr. Justice Logan—*Vice-President for Penang.*

Mr. R. J. Wilkinson—*Secretary,*

Rev. G. M. Reith.
W. J. Napier Esquire,
H. L. Noronha Esquire.
A. Knight Esquire,
H. N. Ridley Esquire,
Councillors.

LIST OF MEMBERS

FOR

1894.

Nos.	Names.	Addresses.
1	Abrahamson, E. E.	Sandakan, B. N. B.
2	Allingham, S.	25, Grosvenor Street, Grosvenor Square, London, W.
3	Anthonisz, J. O.	Singapore.
4	Atkinson, H. S.	Singapore.
5	Bampfylde, C. A.	Kuching, Sarawak.
6	Barnes, W. D.	Penang.
7	Beeston, Capt. R. D., B. A.	Sandakan, B. N. B.
8	Bellamy, G. C., B. A.	Kuala Lumpur, Selangor.
9	Bernard, F. G.	Woodleigh, Seranggong Road, Singapore.
10	Berrington, A. T. D.	Selangor.
11	Bicknell, W. A.	Audit Department, Penang.
12	Birch, J. K.	First Magistrate, Penang.
13	Blagden, C. O.	Malacca.
14	Bland, R. N.	Sungei Ujong.
15	Bonser, Sir J. W.	Colombo, Ceylon.
16	Bott, Dr. W. N.	The Grange, Grange Road, Singapore.
17	Braddon, Dr. W. L.	Sungei Ujong.
18	Brandt, D.	Singapore.
19	Brown, Dr. W. C.	Penang.

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20	BRYANT, A. T.	District Office, Dindings.
21	BUCKLEY, C. B.	Orchard Road, Singapore.
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23	CAMUS, M. DE	Singapore.
24	CLAINE, J.	87, Rue du Cherche Midi, Paris.
25	CLIFFORD, H. C.	Kuala Lipis, Ulu Pahang.
26	COLLYER, The Hon. W. R.	Singapore.
27	COPE, J. H.	District Office, Kuala Selangor.
28	COPLEY, GEORGE	Municipality, Malacca.
29	CREAGH, His Excellency C. VANDELEUR, C. M. G.	Sandakan, B. N. B.
30	CROIX, J. ERRINGTON DE LA	Paris.
31	CURRIE, ANDREW	28, Fenchurch Street, London.
32	DANE, Dr. R.	Province Wellesley.
33	DENT, Sir ALFRED, K.C.M.G.	11, Old Broad Street, London, E. C.
34	DEW, A. T.	Perak.
35	DOWN, ST. V. B.	Singapore.
36	DUNLOP, C.	Powell & Co., Singapore.
37	DUFF, R. W.	Pahang.
38	EGERTON, WALTER	Singapore.
39	ELCUM, J. B.	Singapore.
40	ESCHKE, H. H.	German Consulate, Singapore.
41	EVERETT, A. HART	Labuan.
42	EVERETT, H. H.	Sarawak.
43	FEILDING, J.	Scotland.
44	FERGUSON, A. M., Jr.	18 & 19, Baillie Street, Fort, Colombo.

Nos.	Names.	Addresses.
45	GAGGINO, G.	Gaggino & Co., Singapore.
46	GENTLE, ALEX.	Grange Road, Singapore.
47	GOLDNEY, His Honour Sir J. T.	Trinidad.
48	GOSLING, T. L.	River Valley Road, Singapore.
49	GOTTLIEB, G. S. H.	Penang.
50	GRAHAM, JAMES	Glasgow.
51	GULLAND, W. G.	Paterson, Simons. & Co., England.
52	HALE, A.	Negri Sembilan.
53	HAUGHTON, H. T.	Singapore.
54	HAVILAND, Dr.	Europe.
55	HERVEY, The Hon'ble D. F. A., C. M. G.	Europe.
56	HILL, E. C. H.	Inspector of Schools, Singapore.
57	HILL, F. W.	Selangor.
58	HOSE, Right Revd. Bishop G. F., M.A., D.D. (Honorary Member)	Singapore.
59	HOSE, C.	Baram, Sarawak.
60	HOUTHUYSEN, C. L.	Batavia.
61	HOYNCK VAN PAPENDRECHT, P. C.	Singapore.
62	HULLETT, R. W., M.A.. F.L.S.	Singapore.
63	HUDSON, H. H.	Penang.
64	IBRAHIM BIN ABDULLAH, Dato Dalam.	Johor Bharu.
65	IRVING, C. J., C.M.G.	Hillands, Tiverton, Devonshire, England.
66	JOAQUIM, J. P.	Singapore.
67	JOHOR, H. H. the Sultan of the State and Territory of, G.C.M.G., G.C.S.I. (Honorary Member)	Johor.

Nos.	Names.	Addresses.
68	Kegan, Paul French (Trubner & Co.)	London.
69	Kehding, F.	Laboean, Deli.
60	Keith, Dr. A.	Bangkok.
71	Kelsall, Lieut. H. J., R.A.	Malta.
72	Kennedy, Archibald	Batu Gajah, Kinta, Perak.
73	Ker, T. Rawson	Johor Bharu, Johor.
74	Knight, Arthur	Grassdale, River Valley Road, Singapore.
75	Krom mun Dewawongse Varoprakar, H. R. H. Prince	Bangkok, Siam.
76	Kynnersley, The Hon'ble C .W. S.	Malacca.
77	Lake, H.	Johor.
78	Laugher, H.	Singapore.
79	Lavino, G.	Dutch Consulate, Singapore.
80	Lawes, Revd. W. G. (Honorary Member)	Port Moresby, New Guinea.
81	Leask, Dr. J. T.	Penang.
82	Lees, F. Balfour	....
83	Lewis, John E. A., B.A.	Government Printing Office, Sarawak.
84	Lister, Hon. Martin	Negri Sembilan.
85	Little, R. M.	Gaya, B. N. B.
86	Litton, G.	Canton.
87	Logan, Daniel	Singapore. (Penang.)
88	Low, Sir Hugh, G.C.M.G.	England.
89	Macbean, W.	Straits Insurance Office, Hongkong.
90	Machado, A. D.	Bangkok, Siam.
91	Martin, Dr. L.	Mabar Estate, Deli, Sumatra.

Nos.	Names.	Addresses.
92	MAXWELL, H.E. W. E., C.M.G.	Colonial Secretary's House, Singapore.
93	MAXWELL, R. W.	Inspector-General's Office, Singapore.
94	MCKILLOP, J., F. C. S.	Pulau Brani, Singapore.
95	MEREWETHER, E. M.	Singapore.
96	MILLER, JAMES	Gilfillan, Wood & Co., Singapore.
97	MELDRUM, DATO J.	Johor.
98	NANSON, WM., B.A., F.S.A.	Craigton, Tanglin, Singapore.
99	NAPIER, W. J., M.A.	Paterson Road, Singapore.
100	NEAVE, D. C.	Cluny Road, Tanglin, Singapore.
101	NEWTON, HOWARD	Singapore.
102	NORONHA, H. L.	Singapore.
103	O'BRIEN, The Hon'ble H. A.	Singapore.
104	O'SULLIVAN, A. W. S., B.A.	Penang.
105	OWEN, F. F.	Kuala Pahang.
106	ORMSBY, G.	Labuan.
107	PARKES, D. G.	Taiping, Perak.
108	PAUL, W. F. B.	Europe.
109	PERHAM, The Ven. Archdeacon (Honorary Member)	Singapore.
110	READ, W. H. M., C.M.G.	9, Petersham Terrace, Queen's Gate, London.
111	REITH, Revd. GEO. M., M.A.	Cavenagh Road, Singapore.
112	RICKETT, C. B.	Hongkong and Shanghai Bank, Foochow.

Nos.	Names.	Addresses.
113	RIDLEY, H. N., M.A., F.L.S.	Botanic Gardens, Singapore.
114	RODGER, J. P.	Europe.
115	ROST, Dr. REINHOLD (Honorary Member)	Europe.
116	SALMON, J.	………
117	SARAWAK, H. H. The Raja of, G.C.M.G. (Honorary Member)	Kuching, Sarawak.
118	SATOW, E. M., C.M.G. (Honorary Member)	Monte Video, S. America.
119	SCHAALJE, M.	Medan, Deli.
120	SCOTT, Dr. DUNCAN	Europe.
121	SEAH LIANG SEAH.	Chop "Chin Hin," Singapore.
122	SEAH SONG SEAH.	Chop "Chin Hin," Singapore.
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124	SHELFORD, W. H.	Singapore.
125	SHELLABEAR, W. G.	Singapore.
126	SKINNER, The Hon'ble A. M., C.M.G.	Resident Councillor, Penang.
127	SMITH, Sir CECIL CLEMENTI, M.A., G.C.M.G.	England.
128	SOHST, T.	Mount Rosie, Chancery Lane, Singapore.
129	SOURINDRO MOHUN TAGORE, Raja, Mus. Doc.	Pathuria Ghata Raj Bati, Calcutta, India.
130	ST. CLAIR, W. G.	*Singapore Free Press* Office, Singapore.
131	STRINGER, C.	Singapore.
132	SWETTENHAM, The Hon'ble F. A., C. M. G.	Resident, Perak.

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133	SYED MOHAMED BIN AHMED AL SAGOFF	Singapore.
134	SYED ABUBAKAR BIN OMAR AL JUNIED	Arabia.
135	SYERS, H. C.	Kuala Lumpur, Selangor.
136	SKEAT, W. W.	Klang.
137	TALBOT, The Hon'ble A. P.	Singapore.
138	THOMAS, O. V.	Singapore.
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140	VAN BENNINGEN VAN HELSDINGEN, Dr. R.	Deli, Sumatra.
141	VERMONT, The Hon'ble J.M. B.	Batu Kawan Estate, Province Wellesley.
142	WALKER, Lieut.-Col. R. S. F., C.M.G.	Perak.
143	WALKER, H.	Land and Survey Department, Sandakan, B.N.B.
144	WARREN, H. E. Major-General Sir CHARLES, G.C.M.G., K.C.B.	Singapore.
145	WATSON, E. A.	Pahang.
146	WELLFORD. J.	Selangor.
147	WEST, F. G.	Selangor.
148	WHEATLEY, J. J. L.	Muar.
149	WILDMAN, R.	U. S. America.
150	WILKINSON, H. J.	Singapore.
151	WISE, E. A.	Pekan, Pahang.
152	WRAY, L., Jr.	Perak Museum, Perak.
153	WRENCH, W. T.	Singapore.

Members are requested to inform the Secretary of any change of address or decease of members, in order that the list may be as complete as possible.

All communications concerning the publications of the Society should be addressed to the Secretary; all subscriptions to the Treasurer.

Members may have, on application, forms authorising their Bankers or Agents to pay their subscription to the Society regularly each year.

ANNUAL REPORT

OF THE

COUNCIL

OF THE

STRAITS BRANCH

OF THE

ROYAL ASIATIC SOCIETY,

FOR THE YEAR 1893.

The Council are happy to state that the finances of the Society are in a satisfactory condition.

The following members have been during the year elected, subject to ratification by the General Meeting.

Messrs. J. MELDRUM.
H. H. HUDSON.
H. S. ATKINSON.
JOHN WELLFORD.
R. W. DUFF.
J. H. COPE.
W. W. SKEAT.

The following gentlemen resigned their Membership: Mr. THOROLD DICKSON, Mr. BURKINSHAW, and Mr. DIETHELM; and the Council regret to have to record the loss by death of Sir E. C. BOVILL, and Mr. H. M. BECHER.

During the year it was resolved by the Council that, owing to the constant delay in publishing the Journal, the printing should be put into the hand of the Manager of the American Mission Press; one number of the Journal was at that time being printed by the Government Press, and this with another printed simultaneously by the Mission Press will shortly be in the hands of the members.

The delay in the printing of the first number was caused by unusual stress of work at the Government Press, while an accident to machinery caused delay in the number printed at the Mission Press. The Council hope that the next numbers will be printed with greater rapidity. The new edition of the map is well in hand. Great assistance has been given by the various Residents of the Native States, the Resident Councillors of Penang and Malacca, and others, who have supplied revised copies of the maps of different States, and have sent plans of surveys of various little-known districts. Copies of the published maps of Perak, Siam, and Johor have also been received from those Governments, with permission to utilize them in the new edition. The coast-line has undergone much revision, and the latitude of several points has been more correctly determined.

The Council desire to express their great regret at the death of Mr. H. M. BECHER, who had taken an active interest in the compilation of the map and had devoted much time to it, and who indeed lost his life while exploring the Tahan district, in Pahang, in the interests of Geographical Science.

The Government has been unable to grant any pecuniary assistance this year towards the bringing out of the map, as it has done on former occasions, but an offer has been received from the War Office to photo-zincograph the map at their expense and to supply the Government and War Office with copies, and put the map on sale to the public.

This proposal is still under consideration of the Council.

A large number of pamphlets, journals, and books have been received from kindred Societies and private persons, and have been added to the library. A book-case was purchased for their reception, and the library has been partly catalogued.

PROCEEDINGS

OF THE

GENERAL MEETING

OF THE

STRAITS BRANCH

OF THE

ROYAL ASIATIC SOCIETY,

HELD ON

JANUARY 30TH, 1894.

Present:

H. E. Sir Charles Warren.
Right Rev. Bishop G. F. Hose.
Mr. Justice Logan.
Rev. G. M. Reith.

Messrs. Napier.
Noronha.
De Camus.
St. Clair.
Talbot.
H. O'Brien.

Messrs. H. N. Ridley.
Haughton.
Knight.
Eschke.
Stringer.

The minutes of the last meeting were read and confirmed.

The following new members were proposed and elected:—

Mr. Justice Collyer, proposed by Mr. St. Clair, seconded by Mr. Logan.

Mr. Wilkinson, proposed by Mr. W. E. Maxwell, seconded by Mr. Haughton.

Mr. Shellabear, proposed by Mr. Ridley, seconded by Bishop Hose.

The Report was read and passed.

The Treasurer's accounts were passed.

The following were elected as Officers for the ensuing year:—

President—Right Rev. Bishop G. F. HOSE.
Vice-President for Singapore—The Hon. W. E. MAXWELL.
" " " *Penang*—Mr. JUSTICE LOGAN.
Secretary—Mr. R. J. WILKINSON.
Council—Messrs. G. M. REITH, W. J. NAPIER, H. L. NORONHA, A. KNIGHT, and H. N. RIDLEY.

Sir CHARLES WARREN proposed a vote of thanks to Sir CECIL CLEMENTI SMITH, who had been for so long patron of the Society.

The Rev. G. M. REITH proposed that instructions be given to the Council to consider, and with full power to make necessary arrangements to compile, an Encyclopædia of Malaya, provided that the scheme be practicable. Mr. NAPIER seconded the proposal, which was carried.

Sir CHARLES WARREN proposed that the Map Committee of last year should continue their work as before.—Carried.

The Right Rev. BISHOP HOSE proposed a vote of thanks to the late President, which was carried.

Sir CHARLES WARREN proposed a vote of thanks to the Secretary.—Carried.

STRAITS BRANCH OF THE ROYAL ASIATIC SOCIETY.

Dr. **Honorary Treasurer's Cash Account from 1st January to December, 1893.** **Cr.**

		$	c.			$	c.
1893.	To Balance on 1st January, 1893	1,484	50	1893.	By Clerk's Salary from December 1892 to May 1893 ...	60	00
	,, Subscriptions—1894 ...	5	00		,, Petty Expenses for six months	3	07
	,, ,, 1893 ...	519	00		,, Advertising in local papers ...	4	00
	,, ,, 1892 ...	40	00		,, Commission to Collector ...	10	00
	,, Proceeds of Sales of Map of the Malay Peninsula ..	167	00		,, Mr. Holloway, for clerical assistance	5	00
	,, Proceeds of Sales of Journals	264	66		,, E. Stanford, balance due on Map Account	374	60
	,, Interest on Credit Balance. Chartered Mercantile Bank	1	03		,, Miss Overbeck, for translation	196	60
	,, Chartered Bank ...	8	62		,, C. Davies Sherborn, for Bibliography of Malaya ...	157	06
	,, Mercantile Bank, Limited ...	12	00				
	Carried forward,...	2,501	81		*Carried forward,...*	810	33

Dr. Honorary Treasurer's Cash Account from 1st January to December, 1893. Cr.

		$ c.			$ c.
1893.	*Brought forward,...*	2,501 81	1893.	*Brought forward,...*	810 33
				,, Koh Yow Hean Press, for paper ...	187 50
				,, Sailors' Home, for charts ...	4 00
				,, Discount on cheques ...	2 40
				,, Postage	5 34
				,, Balance in Chartered Bank on 31st December, 1893...	678 31
				,, Balance in Mercantile Bank on 31st December, 1893...	808 93
				,, Balance with Honorary Treasurer	5 00
		2,501 81			2,501 81

Singapore, 5th January, 1894.

J. O. ANTHONISZ,
Honorary Treasurer

EARLY INDO-CHINESE INFLUENCE IN THE MALAY PENINSULA.

As Illustrated by some of the Dialects of the Aboriginal[1] Tribes.

On a visit to Burma, in January 1892, I happened to meet with a vocabulary[2] of the language of Pegu, spoken by a race who call themselves Mōn, but who are also sometimes termed Talaing. While reading casually through it my attention was arrested by several words with which I seemed somehow to be familiar, and a more careful perusal convinced me of the fact that a considerable number of the Peguan words closely resembled their equivalents in the Besisi dialect of the Malay Peninsula, of which I had collected a short vocabulary from some aborigines of that tribe living in Malacca territory. This coincidence struck me at the time as being of great interest and I determined to look into the matter more carefully on my return to the Straits. A mere comparison of the vocabularies of the two languages could not have led to any very satisfactory results and it seemed desirable to take into account as many of the other aboriginal dialects of the Malay Peninsula as I could get hold of and to include in the comparison a few other Indo-Chinese languages of cognate origin, especially the language of Camboja (Khmer) and such of the ruder dialects of the Mekong valley and southern Siam as seemed to throw any light on the subject.

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[1] The words "aborigines" and "aboriginal" are used in this paper to denote such of the non-Muhammadan inhabitants of the Peninsula as are not, like the Chinese and Hindus, settlers who have in historical times arrived from elsewhere. It is not intended to imply that all, or any, of them were absolutely autochthonous, or even that they were the first settlers; but it is assumed, as sufficiently proved elsewhere, that their presence in the Peninsula was antecedent to the immigration of the Sumatran Malays.

[2] In "Specimens of the Languages of India" published in 1874 at Calcutta by the Bengal Government.

Annamese I thought it as well to avoid, and I have hardly looked into it at all; first because owing to its geographical position, both past and present, it could not possibly have exercized any influence on the aboriginal dialects of the Peninsula and secondly because it has been so deeply modified by Chinese influence, that it cannot be regarded as a typical member of the Mon-Annam stock.

The collection of materials naturally took a considerable time. A good many, it is true, happened to be in my possession, more especially the vocabularies of the aboriginal dialects published in former numbers of the Journal of the Straits Branch of the Royal Asiatic Society, but the greater part had to be procured from elsewhere. The materials are fairly numerous but their value is often much reduced by the inaccuracies with which they abound, the scantiness of the information they contain, and the absence in many cases of anything like systematic arrangement. Of the latter fault I consider Newbold's vocabulary of the "Orang Benua" a glaring example: for he has evidently mixed up in one list fragments of the dialects of three or four distinct tribes, thus producing a language which was certainly never spoken by any one aboriginal tribe that ever existed. Yet his vocabulary is perhaps the fullest that is available for the study of the dialects in the neighbourhood of Malacca and, in spite of its faults, is a very valuable one.

Many of the materials for the comparison of these various languages and dialects are scattered about in different books which are not readily accessible except to persons within reach of a good library; and the greater part of this paper was put together before I had been able to refer to the "Journal of the Indian Archipelago" and the late Mr. J. R. Logan's numerous notices of the wild tribes and their languages. A reference to those notices showed me that the conclusions I had drawn from the evidence I had then collected had been to some extent anticipated by that high authority, who recognized the existence of of Mon-Annam words in the dialects of the "Orang Semang" and the "Orang Benua," being led thereto, curiously enough, by the same Besisi dialect, in which he found analogies with Annamese.[3] Nevertheless it seemed to me worth while to proceed further in the matter, first because the subject is not at all fully treated by Logan in his comprehensive philological scheme, of which indeed it forms but an insignificant part, and secondly because considerable additions have been made since his day to our knowledge of the dialects in question and new evidence can therefore be adduced in support of his conclusions. I was also impelled by the consideration that since Logan's time nothing, so far as I could discover, had been done either to confirm or to controvert his views: his conclusions appear to have been lost sight of or ignored by those who in recent times have dealt with these matters. The result has been that several of these authors have delivered themselves of the most extraordinary *dicta* regarding the relation of the aboriginal dialects to other languages, some[4] without any attempt at proof having asserted their connection with a variety of families of speech with which, so far as is at present known, they have nothing whatever to do, while others have been content to assert or imply that no known element except the Malayan has as yet been discovered in them. A perusal of Logan's articles in the "Journal of the Indian Archipelago" will convince anyone that the latter statement is incorrect.

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[3] v. J. I. A. vol. iv, p. 345; N. S. vol. iv, p. 159; J. S. B. R. A. S. No. 7, pp. 84-92.

The purpose of this paper then, is to point out again, however imperfectly, a line of research which was opened by the enquiries of Mr. J. R. Logan about forty years ago, but seems to have been forgotten and never followed up, although the results to which it may eventually lead might be expected to prove most interesting. In general terms it may be called the study of the early influence of the main-land of Indo-China on its outlying province, the Malay Peninsula, closely connected as they are in geographical position but widely sundered at the present day in regard to the ethnological and philological characteristics of the greater part of their inhabitants. For many generations the Peninsula has had intimate relations with Sumatra and in a less degree with Java and Borneo, with all of which it has many affinities; but, with the exception of the Siamese suzerainty over the Northern States and provinces, it has had little to do of late with Indo-China, and for practical purposes, as well as for purposes of scientific classification, it may be reckoned as part of the Eastern Archipelago rather than as an outlying portion of Further India.

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[4] *E. g.* Mr. Vaughan Stevens is reported by Mr. Clifford in J.S.B. R. A. S. No. 24, to have said that Sakai is allied to Tibetan. It would be interesting to know what prompted this statement and on what evidence it was made.

I venture to think, however, that a careful analysis of the languages of the races that preceded the present Malay inhabitants of the Peninsula, the dialects, that is to say, of the scattered aboriginal tribes known generally to the Malays as "Orang utan" (jungle-men), or "Orang bukit," (hill-men) as well as by a variety of other names and nicknames, will bear out a view which seems to me foreshadowed by the fragments of linguistic evidence I have been able to collect; the view, namely, that in former times the connection of Indo-China with the Peninsula was more vital and effective than it is now or has ever been in recent years; and that an Indo-Chinese race, closely allied to the Peguans and their cousins the Cambojans and speaking a language of the Mon-Annam type, held some sort of sway over at least a part of the Peninsula at a time when the Malays had not yet established a footing there as the dominant power.

It may seem rash to base theories of this sort on such comparatively slight evidence as I am at present able to bring forward; but I imagine that in expressing what seems to me the conclusion to which that evidence leads, I am not exceeding the limits of a strictly legitimate hypothesis. Additional facts collected subsequently or independently can only serve either to disprove or to confirm this provisional conclusion, and either alternative should be welcomed as an addition to our knowledge of a subject which is at present involved in obscurity and has hardly perhaps met with the attention that from the historical point of view it would seem to deserve.

I will now present the linguistic evidence in the form of a comparative vocabulary in which a considerable number of words of the aboriginal dialects of the Peninsula are compared with their equivalents in Mon (Peguan), Khmer (Cambojan) and a variety of the dialects of the wild tribes of Indo-China which have been deeply influenced by the languages of their civilized neighbours and sometimes preserve archaic forms that are more primitive than the modern colloquial forms of those languages. With the exception of Besisi and a few Malacca Jakun and Mentra words collected by myself, all the words in this comparative vocabulary are given on the authority of the published works in which they are to be found. The original spelling is left unaltered in all cases, except that the elaborate diacritical vowel marks of the French transliteration of Khmer and the tonal marks of Annamese have not been reproduced; to have done so would have involved much additional trouble and would have served no useful purpose in the present paper.

The authorities in question are, for

I.—Aboriginal dialects of the Malay Peninsula.

- (*a*) Orang Utan of Johor, Ulu Endau, Ulu Rumpin; Aborigines of Ulu Kelantan and Ulu Patani—Miklucho-Maclay, Straits Asiatic Journal, No. 1, pp. 41-44.
- (*b*) Orang Benua, Kedah Semang and Jooroo[5] Semang. Newbold, British Settlements in the Straits of Malacca, vol. ii. p. 422 seqq.
- (*c*) Semang—Begbie, The Malayan Peninsula, pp. 14-18. (No locality is given; and it seems doubtful whether this may not be a Sakai dialect).
- (*d*) Senoi, Tembe, Blanja and Slim Sakai.—Clifford, Straits Asiatic Journal, No. 24, pp. 13-29.
- (*e*) A few words of Kedah Semang from Crawfurd, Malay Grammar; of "Benua" and "Pantang Kapur" from Logan's articles in the Journal of the Indian Archipelago and the Straits Asiatic Journal, Nos. 3 and 9; and a word here and there from other sources as indicated in the notes when they occur.
- (*f*) For the rest, the vocabularies in the Straits Asiatic Journal, No. 5, p. 129 seqq.

II.—Languages and dialects of Indo-China.—

1. *Civilized.*
    - (*a*) Mon[6]—Haswell, Grammatical Notes and Vocabulary of the Peguan Language.
    - (*b*) Khmer[7]—Moura, Vocabulaire Cambodgien.

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[5] *I.e.*—Juru, near Province Wellesley.

[6] Reference has also been made to Specimens of the Languages of India (v. note. 2) and Hodgson's Essays on Indian subjects, vol. ii. pp. 45-50; and I would here express my indebtedness to my friend Mr. H. L. Eales, B.C.S., lately Superintendent of Census Operations in Burma and now Deputy-Commissioner, Magwe, for much valuable assistance in connection with this language.

[7] Reference has also been made to Aymonier, Dictionnaire Khmer, Français.

2. *Uncivilized.*
    - *(a)* Ka and Chong—Crawfurd, Embassy to Siam, etc. vol. ii. *ad fin.*
    - *(b)* Samre, Por, Cuoi, Phnong, Stieng and Prou.—Moura, Le Royaume du Cambodge, vol. i. pp.440-447.
    - *(c)* Samre, Chong, Stieng, Banar, Cedang, Huei, Cat, Souc, Soue, Hin, Proons, So, Nanhang, Mi, Khmous, Lemet.—Garnier, Voyage d'Exploration en Indo-Chine, vol. ii. pp. 490-517.

A few words of old Khmer and of Annamese have also been extracted from the last named authority.

The languages aud dialects here mentioned extend from the tropic of Cancer to the neighbourhood of the equator and over some fifteen degrees of longitude, and they have been collected by a number of different persons, on all manner of systems. Allowance must therefore be made for the various methods of spelling adopted, which, as already stated, I have not ventured to meddle with. In the case of the Indo-Chinese words (*i. e.* those in the last column), except Mon and the two dialects given by Crawfurd, the authorities are French and have followed a French system.

In transliterating the Mon words from Haswell's vocabulary, which is in the native character, I have endeavoured to follow the method of spelling now universally adopted for the English rendering of Oriental languages, but as I have had no opportunity of hearing the language spoken it is to be expected that the rendering of the vowels, which are numerous and complex, is somewhat deficient in accuracy, though no doubt precise enough for the present purpose. In Besisi words *n* represents the sound of ڽ (=ny) but unlike ڽ it occurs as a final sound; the modified vowels *ä* and *ö* are sounded approximately as in German; *a* has the sound of the English "aw"; an apostrophe after a vowel represents the abrupt tone of the vowel, when it occurs without a vowel at the beginning or in the middle of a word it indicates a sound something like the Malay *ë* only if possible shorter and hardly audible; final consonants, which are almost inaudible, are written above the line in small type.

Comparative Vocabulary.

I. Family relationships.[8]

English.	*Aboriginal dialects of the Malay Peninsula.*	*Indo-Chinese languages and dialects.*
Father	iku*n* (Besisi) ikun (Benua)	kunh (Samre) kunh (Por) conh (Cuoi) ku*ny* (Chong)
Father	ita (Endau)	ta (Old Khmer) [=grand-father]
Child	knon (Besisi) knon (Johor) kĕnod (Senoi)	kōn (Mon) con (Khmer) con (Annam) con (Cat) con (Souc) con (Soue)
Son	kōn (Perak Semang)	ken (Old Khmer) ken (Samre) ken (Chong)
Grand-child	kanun (Benua)	

II. Parts of the body.

English.	*Aboriginal dialects of the Malay Peninsula.*	*Indo-Chinese languages and dialects.*
Arm (biceps)	bleg^{n} (Besisi) beling (Benua) baling (Semang)	bleng (Soue)
Back	chĕlón (Besisi)	khnang (Khmer)

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[8] A number of words of relationship are so similar in the Mon-Annam and Malayan groups that no safe conclusion can be drawn as to the origin of many of the forms in the aboriginal dialects which resemble them; they have therefore been omitted here.

Back	kiah (Benua)	cha' (Mon)
	ki-ah (Semang	
Blood	cheong (Kedah Semang)	chhim (Mon)
Body	sö' (Besisi)	sach (Khmer)
	usi (Perak Semang)	[= flesh]
	isi (Ijoh Semang)	
Flesh	see (Jooroo Semang)	
Bone	ja'ang (Besisi)	cheong (Khmer)
	jahang (Benua)	khong (Chong)
	aieng (Kedah Semang)	xu'o'ng (Annam)
	iaang (Perak Semang)	cheang (Khmous)
Breasts (female)	tuh (Besisi)	t*a*h (Mon)
		da (Khmer)
Milk	thuh (Benua)	tucda (Khmer)
Ear	kantak (Perak Semang	k-tō (Mon)
	ntokn (Johor)	tour (Stieng)
	inteng (Ijoh Semang)	dou (Banar)
	anten (Kelantan)	
	anten (Patani)	
	tög^{n} (Besisi)	
Eye	mät (Besisi)	mot (Mon)
	mat (Benua)	mat (Ka)
	med (Jooroo Semang)	mat (Chong)
	med (Kedah Semang)	
	met (Semang)	mat (Banar)
	med (Ijoh Semang)	mat (Cedang)
	med (Kelantan)	mot (Samre)
	med (Patani)	mot (Por)
	mat (Perak Semang)	mat (Cuoi)
	met (Kenering Semang)	mat (Phnong)
	mot (Endau)	mat (Pron)
	mot (Johor)	
Finger	raan (Johor)	meream (Khmer)
Foot	jaung ⎫	chung (Mon)
	jok^{n} ⎭ (Besisi)	chung (Khmer)
	iûk (Perak Semang)	sang (Old Khmer)
	yohk (Kenering Semang)	jiung (Soue)

Foot	diokn (Johor)	young (Proons)
	chung (Benua)	sinh (Por)
	chau (Jooroo Semang)	jung (Cuoi)
	tchan (Kenering Semang)	jong (Phnong)
	chan (Ijoh Semang)	chong (Stieng)
	chan (Selama Semang)	giong } (Banar)
	chan (Semang)	cheun }
		cho'n (Annam)
Hair	so' (Besisi)	sōk (Mon)
	sak (Semang)	sac (Khmer)
	sok (Kenering Semang)	souk (Old Khmer)
	sok (Kelantan)	tioc (Stieng)
	sok (Senoi)	xoc (Banar)
	sog (Ijoh Semang)	
	sog (Selama Semang)	
	sogk (Patani)	
	suk (Endau)	
	suk (Johor)	
Hand	thē (Besisi)	toà (Mon)
	t'hi } (Benua)	day (Khmer)
	tung }	ti (Old Khmer)
	toong (Semang)	ti (Chong)
	ting (Perak Semang)	ti (Soue)
	tong (Jooroo Semang)	ti (Proons)
	tein (Johor)	tay (Annam)
Arm		ti (Banar)
Finger	ting (Perak Semang)	
	ting (Kenering Semang)	
	tü (Johor)	
	wantung (Jooroo Semang) [lit.—"child of hand"]	
Head	koi (Besisi)	tuwi (Ka)
	koi (Benua)	
	kay (Kedah Semang)	
	kuya (Jooroo Semang)	toui (Huei)
	ko-i (Semang)	
	kûi (Perak Semang)	toui (Proons)
	kūi (Ijoh Semang)	

Head	kûi (Senoi)	
	kûi (Tembe)	
	kui (Kelantan)	
	kui (Patani)	
	kôe (Selama Semang)	
	koi (Endau)	
	koi (Johor)	
Mouth	pang (Besisi)	paing (Mon)
	ban (Kedah Semang)	mieng (Annam)
	hain (Kenering Semang)	
	hein (Selama Semang)	
Navel	shôk (Senoi)	phchet (Khmer)
Nose	mû (Besisi)	muh (Mon)
	mû (Perak Semang)	mouh (Banar)
	muh (Kenering Semang)	mui (Annam)
	mu (Endau)	
	mu (Johor)	mo (Phnong)
	moh (Ijoh Semang)	
	moh (Patani)	mus (Cuoi)
	mo (Kelantan)	
	mah (Semang)	
Thigh	blēu (Besisi)	phlou (Khmer)
	balah (Semang)	
Tongue	litig (Jooroo Semang)	lătaik (Mon)
	letik (Semang)	ntac (Khmous)
	letig (Selama Semang)	andat (Khmer)
	lentak (Perak Semang)	
	lentek (Kelantan)	
	lentek (Patani)	
	rentak (Senoi)	
Tooth	lemo*n* (Besisi)	thmenh (Khmer)
	lemun (Benua)	
	lemun (Jooroo Semang)	
	lemun (Perak Semang)	
	lamo-ing (Semang)	
	limon' (Endau)	
Tooth	nis (Patani)	gnĕk (Mon)

III. Animals etc.

Bird	chīm (Besisi)	kăchēm (Mon)
	cheym (Perak Semang)	chiem (Chong)
	tchem (Kenering Semang)	chim (Banar)
	chêp (Senoi)	chiem (Huei)
	chêp (Tembe)	kiem (Souc)
		chim (Annam)
Egg	k'poh (Besisi)	pong (Khmer)
	kepoh (Benua)	
Egg	tab (Perak Semang)	khtap (Phnong)
Centipede	kiīp (Besisi)	kaep (Khmer)
Dog	ch*a* (Besiri)	tcho Old Khmer)
	chu (Perak Semang)	cho (Ka)
	tchiau (Johor)	cho (Ka)
	koih	cho (Annam)
	chor } (Benua)	achor (So)
	choo*h*	achor (Nanhang)
	cho' (Senoi)	chor (Huei)
	cho' (Blanja Sakai)	so (Mi)
	cho' (Slim Sakai)	so (Khmous)
	chuor (Tembe)	so (Lemet)
	chioke (Kenering Semang)	
		? *cf.* chhke (Khmer)
Elephant	'mrat (Besisi)	tomrey (Khmer)
	tameenda (Jooroo Semang)	
Ivory	bala (Benua)	phluc (Khmer)
	bāla'h (Semang)	
Fish	ka' (Besisi)	ka (Mon)
	ka' (Senoi)	ca (Stieng)
	ka (Benua)	ca (Banar)
	kâ (Perak Semang)	ca (Soue)
	kah (Kenering Semang)	ca (Annam)
		ka (Khmous)
		ka (Lemet)
Millipede	klui (Besisi)	khlos (Khmer)
	klui (Mentra)	

Mosquito	kĕmūs (Mentra)	mus (Khmer)
Mosquito	kemit (Senoi) săbet (Perak Semang) sben (Ijoh Semang) semo*n* (Malacca Jakun)	kămit (Mon)
Rat	kanē (Besisi) kedeg (Perak Semang) kanye kannik } (Benua)	condor (Khmer) kane (Phnong) kane (Prou) keney (Stieng) kone (Banar)
Wild cat	kĕlâra (Mentra)	khla rokhen (Khmer)
Monkey	hol (Senoi) [= the siamang	[sva] khol (Khmer) [= a large species of monkey]

IV. Plants, etc.

Flower	bakau (Perak Semang) bekaau (Kenering Semang)	phca (Khmer) kau (Mon) kao (Stieng)
Fruit	pli (Besisi)	phlê (Khmer)
Leaf	laluk (Benua) selâ (Perak Semang) selah (Kenering Semang)	sloc (Khmer) sla lha } (Mon)
Tree	log^{n} (Besisi) delokn (Johor)	long (Proons) long (Phnong) [=firewood] long (Stieng)
Tree	chuck (Kedah Semang) joho (Benna) jo-ho (Semang) johu (Perak Semang) ioh (Selama Semang)	chhu (Khmer) [=wood] chhu (Mon)
Wood	jĕhu (Senoi) jĕhu (Tembe) jĕhu (Blanja Sakai) jĕhu (Slim Sakai) chue[9] (Pantang Kapur)	

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[9] Logan J. I. A. vol. I., p. 263.

Pith	kol (Senoi)	khuor (Khmer) [=marrow
Climbing rattan	chôk^{n} (Senoi) chyung (Besisi)	chuk (Mon) [=rope]
Plantain	diok (Johor)	chec (Khmer)
Plantain	telû (Perak Semang)	[tout] taloi (Khmous)
Rice	be (Besisi) bei (Jooroo Semang)	bai (Khmer) [=cooked rice]
Padi	bâ[10] (Perak Sakai)	ba (Banar) [=*padi*] phe (Banar) [=*bĕras*]
	biyun (Perak Semang)	pung (Mon) [=cooked rice] pien (Stieng)
Cooked rice	[10]tchana (Perak Sakai) cha'na' (Senoi) cha'na' (Tembe)	chana (Mon) [=food]

V. Miscellaneous Articles and inanimate things.

Salt	empâut (Perak Semang)	ambel (Khmer) po (Mon)
Stone	tmu (Kelantan) gmu (Endau) gmu (Rumpin)	tm*a* (Mon) thma (Khmer) tmo (Chong) tamau (Stieng) tamao (Soue) tamao (Nanhang)
Arrow	lo-i (Semang) laut (Perak Semang) lŏd } lelād } (Ijoh Semang) loig (Selama Semang)	leau (Mon)

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[10] Brau de St. Pol Lias, "Perak et les orangs Sakeys," pp. 271-273.

Arrow	tornan[11] (Jakun)	pruonh (Khmer)
Quiver	lök (Besisi) tĕlak (Mentsa)	clac (Khmer) [=*étui*]
Blowpipe	bĕlau (Besisi) blau (Perak Semang) belau (Ijoh Semang) blau Selama Semang) blahan [13](Johor) bĕlau (Senoi) blâhu (Tembe)	comphlo [12](Khmer)
Mat	pil (Perak Semang) pille (Kenering Semang)	contil (Khmer)
Pillow	tĕnûi (Senoi)	khnoi (Khmer)
Hut	dūg^{n} (Besisi) dĕrk^{n} (Senoi) dêh (Tembe)	tong (Old Khmer) tong (Samre) tong (Chong) doung (Souc) dong (Nanhang)
Jungle	'mbri (Besisi) dĕbi (Perak Semang) bri (Rumpin) bri (Endau) bri (Johor)	prey (Khmer) bri (Old khmer) bri (Chong) bri (Banar) mpri (Khmous) pri (Lemet)
Mountain	bnum (Kelantan) bnum (Rumpin) benum (Endau) benum (Johor)	phnom (Khmer) nong (Old Khmer) nong (Chong) bnom (Stieng)
Mountain	butjak [14]tul (Patani)	tu (Mon)
River	biteu [15](Ijoh Semang)	bî (Mon) [=river]

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[11] J. S. B. R. A. S., No. 4, p. 6.

[12] *Comphlo* would seem to be a derivative *of phlo*, "double," the reference being to the constuction of the blowpipe of two bamboos, the one fitting inside the other. *cf Comphlung*, "musket," from *phlung*, "fire."

[13] Evidently a misprint for *blahau.*

[14] *Butjak*=*puchak* or *punchak*, whence Malay *Kemunchak* "peak."

[15] *Biteu* is for *bi deu* "river of water": *v.* "water."

River	biteu (Selama Semang)	daik (Mon) [=water]
Rivulet	wang batauh (Semang)	
Earth	tē (Besisi)	ti (Mon)
	teh (Perak Semang)	dey (Khmer)
	teh (Ijoh Semang)	te (Chong)
	teh (Selama Semang)	
	tei (Patani)	
	atei (Rumpin)	
	ate' (Endau)	
	atei (Johor)	
	tê (Senoi)	
	tê (Tembe)	
Land	teh (Benua)	
	teh (Jooroo Semang)	
	teh (Kedah Semong)	
Sun	[16]tunkat (Endau)	t-gnoà (Mon)
	tunkat (Johor)	thngay (Khmer)
Sun	matbri (Rumpin)	matpri (Mi)
	matbri (Johor)	matpri (Khmous)
Moon	kachik (Kedah Semang)	khe (Khmer)
	kitchi (Patani)	kăto (Mon)
	kachil (Benua)	mechiai (So)
	guchah (Kenering Semang)	
	gechai (Perak Semang)	cachai (Hin)
	giché (Kinta Sakai)	kaosai (Soue)
	kichek (Ijoh Semang)	
	chi (Selama Semang)	

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[16] The words for "Sun" and "moon" deserve a note to themselves. (I.) For the former we find apparently two distinct sets of words: (1) *tgnoa* (Mon) *thgnay* (Khmer) and representative forms is other dialects, represented perhaps by the first syllable of the Johor *tunkat;* (2) some combination of the root *mat* "eye" with some other word, as *pri*, forest, or *K-to*, which seems to be identical with the root meaning "moon." Thus Jooroo and Kedah Semang have *mitkatok*, Selama Semang *mekator*, Ijoh Semang *maktok*, etc. (II.) For "moon" we find the last-named root by itself. It is a very wide-spread one: *cf* old Chinese *gwat* "moon," which appears in modern dialects as "gueh" &c. but is evidenced by the early Japanese loan-word *gwatsu* or *getsu*, to which these Peninsular forms closely approximate.

Moon	gĕche' (Senoi)	
	gĕche' (Tembe)	
	gĕche' (Blanja Sakai)	
	bi-che (Slim Sakai)	
Star	puloi (Benua)	phlu (Khmer) [= to shine]
	perlohi (Chendariang Sakai)	
	pēlaui (Senoi)	
	poolo-e (Semang)	
Fire	ūs (Besisi)	ōh (Mon) [=fuel]
	hus (Benua)	os (Khmer [=firewood]
	has (Semang)	us (Cuoi) [=fire]
	us (Jooroo Semang)	ounh (Banar)
	us (Kedah Semang)	ounh (Proons)
	ōs (Perak Semang)	ounh (Stieng)
	ass (Kenering Semang)	oun (Cedan)
	oss (Ijoh Semang)	ouidj (Souc)
	aus (Selama Semang)	
	oos (Kelantan)	
	oos (Patani)	
	us (Rumpin)	
	us (Endau)	
	us (Johor)	
	ois (Senoi)	
	ois (Tembe)	
Water	dēu do (Besisi)	daik (Mon) tuc (Khmer)
	dak (Rumpin)	dak (Ka)
	daü d'hu (Benua)	tak (Chong) trak (Old Khmer)
	diau (Johor)	do (Nanhang)
	[17]bateao (Kedah Semang)	doi (So)
	biteu (Ijoh Semang)	
	beteu (Selama Semang)	
	têu (Senoi)	
	têu (Blanja Sakai)	

[17] V. Supra "river."

Water	têu (Slim Sakai)	
Rain	gĕma (Besisi)	koma (Chong)
	gumar (Benua)	ma (Soue)
	kumeh [18](Pantang Kapur)	
Evening	yoop (Semang)	jop (Khmer)

VI.—Qualities, conditions, &c.

Alive	ris (Besisi)	ros (Khmer)
	agos (Perak Semang)	eri (Banar)
	gose (Kenering Semang)	
	gumos (Selama Semang)	
cf to live	gămas (Semang)	
Dead	mbös k'bös (Besisi)	kmoch (Khmer) [= corpse]
	kabûs (Perak Semang)	
	kaboss (Kenering Semang)	
	kebiss (Ijoh Semang)	
	kebiss (Selama Semang)	
	kobs (Johor)	
cf to die	kabus (Semang)	
Cold	teket (Besisi)	cacat (Phnong)
	tkat (Johor)	cat (Khmous)
	tekad (Kenering Semang)	
Hot	pedee (Jooroo Semang)	cadau (Khmer)
	pedê (Selama Semang)	k-tau (Mon)
Small	hedet (Besisi)	dot (Mon)
Male	ongkôn (Perak Semang)	angquang (Phnong)
Male	lĕmól[19] rêmól (Besisi)	chhmul (Khmer)
Female	marbe [20](Selama Semang)	mame (Phnong)
Black	rĕngah (Senoi)	rongit (Khmer) [= dark]

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[18] Logan J. I. A., No I. p 263.

[19] *cf* "Man" *Limo* (Rumpin, Endau, Johor)
Simo (Endau, Johor)

[20] *cf* Woman *tumabeh* (Kenering Semang) *mabeh* (Benua)
mabeh (Ijoh Semang)
marbē (Selama Semang) *mabé* (Semang)

White	pintul[21] (Pantang Kapur) pĕlĕtau (Ijoh Semang) plĕtau (Semang)	p-taing (Mon)
Deep	jĕrö' (Besisi)	chrou (Khmer) chrou (So) chruh (Mon)
Full	'mbu*n* (Besisi)	penh (Khmer)
Quickly	jöh (Besisi)	chhap (Khmer)
Below	kiyom[22] (Kedah Semang)	crom (Khmer)
Many	kĕrp^{n} (Senoi)	kep (Chong)

VII. Actions.

To go	cho' (Besisi) chup (Ijoh Semang) chip (Perak Semang) chîp (Kenering Semang) jok (Madek Jakun chup (Selama Semang) chiop } (Benua) chohok } chîp (Senoi) chîp (Tembe) chi-ŭp (Semang)	cho (Khmer) [=go down] jib (Old Khmer) [=come] cheo (Samre) [=go] chea (Chong)
To eat	[23]chi (Selama Semang) ntia (Johor) nacha (Besisi) machi (Ijoh Semang) chacha (Benua) cha, (Senoi) chioh (Semang) cha' (Tembe)	cha (Mon) cha (Soue) si (Khmer) chha (Samre) cha (Cuoi) chha (Phnong) cha (Prow)
of food	inchi (Benua) inchih (Semang)	

[21] Logan l. c. vol I. p. 264.

[22] Crawford's Malay Grammar vol. I, pp. seqq.

[23] *Cf* the various Chinese dialects in which this widespread root is also found.

To drink	cha dēu (Besisi) (*i.e.* literally to "eat water.") chedo (Benua)	
To void	choh (Senoi)	chac (Khmer)
To sit	gûi (Senoi) gûi (Blanja Sakai) gul (Tembe) gĕri (Slim Sakai)	angcui (Khmer)
To get up	li^k (Besisi)	luc croc } (Khmer)
To awake	ngak (Semang)	phnheac (Khmer)
To sleep	tag (Perark Semang) taig (Kenering Semang) jetek letik } (Besisi) tiok jettik } (Benua) ietek (Johor) te-ik (Semang)	dec (Khmer) tekla (Old Khmer) tep (Banar) theac (Samre) theac (Por)
To walk	dû (Besisi)	dor (Khmer)
To bathe	hum (Besisi)	hum daik (Mon)
To stand	jög^n (Besisi)	chho (Khmer)
To bake	cho'ong (Besisi)	chong (Mon) [=to burn]
To cut	kah (Senoi)	cap cat } (Khmer)
To chop	toit (Besisi)	chet (Khmer)
To catch	chép (Semang)	chap (Khmer)
To plant	mĕtöng (Besisi)	dam (Khmer)
To stab	chôk (Senoi)	chac (Khmer)
To lie	pa'-ho' (Senoi) (*i. e.* tell a falsehood.)	cahac (Khmer)
To cry	j-m (Semang)	jom (Khmer)
To cook	chīn (Besisi)	chien (Khmer)

To be	mung (Senoi) moh (Tembe) mo-ah (Semang)	mean (Khmer)

VIII. Numerals.

One	^{h}moi (Besisi) mooi (Benua)	mwoā[24] (Mon) muey (Khmer)
Two	mā (Besisi) mar (Benua)	bā (Mon) pir (Khmer)
Three	'mpi (Besisi) npe (Johor) ampi (Benua)	pi (Mon) bey (Khmer)
Four	npun (Johor)	p*a*n (Mon)
Five	massokn (Johor)	măsōn (Mon)
Six	pru (Johor)	tărau (Mon)
Seven	tempo (Johor)	tăp*a*h (Mon)

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[24] The numerals occur in similar forms, with certain variations, in other Indo-Chinese dialects, *v. infra.*

Although many of these identifications are very doubtful and some will probably turn out to be erroneous, it will be admitted, after full allowance has been made for such cases, that coincidences as numerous as the above cannot be the result of mere accident but point to the influence of one common language. It would however be rash to conclude that all these aboriginal dialects, or any of them, are cognate to Peguan or Cambojan, and still more rash to thence infer that the races which speak them are ethnologically and genealogically related to the Peguan and Cambojan peoples. It seems pretty clear that the aborigines of the Peninsula cannot be regarded as one stock and the evidence[25] available seems to separate them into at least two distinct families: *(a)* the Negritos, *(b)* the relatively fair race of the centre of the Peninsula; to which I should be disposed to add as a doubtful third *(c)* the mixed tribes of the South, *i. e.* Johor, Malacca and parts of the Negri Sembilan, in which there is much reason for suspecting an aboriginal Malayan stock distinct from, though no doubt to some extent crossed with, the other two. To the best of my belief I have included in my comparison specimens of the speech of all three varieties, and it has been observed that all three, in varying degrees, show traces of Mon-Annam influence. If however they belong to different stocks, it is clear that they cannot all be ethnologically related to the Mon-Annam races, and in the case of the Negritos the thing is entirely out of the question. Without, therefore, going into details of ethnology which are outside the scope of this paper and which I have had no opportunity of studying, I will merely remark in passing that the fact of several distinct dialects of wild tribes of apparently different stocks bearing the impress of one common language is strong evidence that the influence in question was due not to the casual intrusion of an uncivilized tribe, but to the circumambient pressure of a race of relatively higher culture: that is a point to which it will be convenient to recur later on.

The ethnology of the Peninsula seems, however, to be a matter of much complexity and one towards the elucidation of which, I fear, very little positive help can be expected from the present paper. It is to be regretted that the compilers of most of the vocabularies here drawn from give little or no ethnological information regarding the people who speak the dialects they illustrate. It would have been better, if, while giving the name by which a tribe distinguishes itself and that by which it is known to Malays, they had added also a careful description of its physical characteristics. The names "Semang" and "Sakai" are conventional terms[26] and have no fixed ethnological meaning. "Semang" in Malay (according to Favre) merely means "debt-slave" and "Sakai" "servant," "dependent." According to D.F.A.H. in J.S.B.R.A.S. No. 19 p. 35 (note) *Sakai* means "dog" in which case it might perhaps be connected with the Cambojan *chhkê*, which also has that meaning. Mr. Clifford in J. S. B. R. A. S No. 24, p. 14, applies "Semang" to the Negritos and "Sakai" to the fairer race of jungle-men, and that appears to be the usual terminology; yet an anonymous author quoted in No. 1, p. 111. of the Journal does precisely the reverse, and Mr. Clifford himself (l.c. p. 18) speaks of a tribe calling itself "Semang" which was certainly not Negrito in character, while Miklucho-Maclay does not distinguish between Sakai and Semang as ethnical types, styling both of them "Melanesian" races.[27] All this makes it clear that these terms have no definite meaning; and as that is the case, there is an additional reason why caution should be shown in attempting to draw any positive ethnological conclusions from such data as are now under consideration.

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[25] Besides the more recent authorities referred to in this paper Anderson (Considerations relative to the Malayan Peninsula App. p. xxxv.) is quite clear on this point.

But even to assume that the aboriginal dialects are cognate languages which should be classified in the Mon-Annam family would be going further than our evidence justifies us in doing.

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[26] The same is true of most of the other names of these tribes: the Sanskrit origin of "*Mentra*" is well known, and I suspect that *Jakun* represents the Pali *Yakkha*, (demon) and was therefore like *Mentra* an appellation given to the jungle-men by their Hinduized neighbours. The same applies to *Gargasi*. I believe the wildmen of Ceylon are similarly dubbed *Yakkho* by the Singhalese.

[27] l. c. No. 2 pp. 208-9. "I have come to the conclusion that the *Orang Sakai* and the *Orang Semang* are tribes of the same stock; that further, in their physical *habitus* and in respect of language they are closely connected with each other and represent a pure unmixed branch of the Melanesian race."

Apart from the fact that in the case of some of the tribes, the weight of ethnological facts, so far as they can affect a philological question, tends to oppose such a conclusion, it must be remembered that the words that have been shown to be of Indo-Chinese origin constitute but a small portion of the vocabulary of the aborigines. There is nothing to prove that the basis of their languages is not entirely distinct and that the Mon-Annam words are not merely adopted, like the Sanskrit words in Malay, and grafted on to their primitive dialects. Partial identity of vocabulary proves historical contact but not necessarily family relationship among languages, and in comparing them the structure must be considered as well as the bare materials.

Now as regards the syntactical structure of these dialects very little evidence is forthcoming, and until a careful examination has been directed to that point it will be impossible to classify them with absolute certainty in any family of languages. M. Terrien de Lacouperie in "The Languages of China before the Chinese," enters somewhat fully into the varieties of ideological structure in different languages and points out the importance of duly considering the order of words in a sentence in languages, where that order is practically fixed and where in the absence of inflection or a developed form of agglutination, there is nothing but the syntactical structure and the identity of root-words to guide us in comparing different groups. He mentions incidentally[28] that the ideology of the "Semang" can be expressed by the formula 1, 4, 5, 8, III., that is to say:

1.—Genitive precedes noun.
4.—Adjective follows noun.
5.—Object precedes verb.
8.—Verb follows subject.
III.—Subject object verb is the normal order of the sentence.

I do not know whence he derives his information as to this point, for he quotes no authority, and some doubt remains therefore as to what particular tribe he denotes by the term "Semang," but from the context it is plain that some of the Peninsular Negritos are intended.

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[28] op. cit. p. 75. (note 2).

Now the ideology of the Mon-Annam group of languages expressed on the same principle is 2, 4, 6, 8, VI., that is:—

2.—Genitive follows noun.
4.—Adjective follows noun.
6.—Object follows verb.
8.—Verb follows subject.
VI.—Subject verb object is the normal order of the sentence.

Assuming then the "Semang" ideological formula to be correct, it is clear that the syntactical structure of these Negrito dialects differs considerably from that of the Mon-Annam languages, but (as the author above mentioned points out) conforms to the same type as the Selung (a mixed or hybrid Malayan dialect of the Mergui Archipelago) and is very similar to that of Andamanese, which is given as 1, 4, 5, 8, I. III., which means that in addition to the points above noted the object sometimes precedes the subject instead of coming after it.

On the other hand, according to Mr. Clifford,[29] the ideology of the Senoi dialect of Sakai, and presumably of the other Sakai dialects also, would appear to be identical with that of the Mon-Annam group. This in itself is enough to draw a line between the speech of the Negritos and that of the fairer race, which according, to Mr. Clifford differ also widely in vocabulary, and the identity of the Sakai and the Mon-Annam structures must be admitted as an argument in favour of classing the former dialects in the same group as the latter and might even be brought forward to support the view that a strain of Indo Chinese blood exists in these aboriginal tribes. While however admitting that conclusion to be a possible one, it is necessary to point out that the argument on which it is at present assumed to rest is by no means strong: the Malay ideology is also practically the same as that of the Sakai and Mon-Annam groups and it has not yet been proved that the Sakai structure, though identical with the other two, is not in its origin independent of both. At any rate, its connection with the one may be quite as remote as with the other. That both have been in a position to exercise an influence over it, is, as we have seen, sufficiently proved by the mere verbal evidence of a comparative vocabulary but whether the connection is one of language—affinity or mere contact must for the present at least be left an open question.

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[29] J. S. B. R. A. S., No. 24, p. 23.

After making all these deductions and rejecting, if not absolutely, at any rate for the time being, the inferences of race—identity and linguistic relationship which one might be tempted to draw from the somewhat scanty materials now under consideration, a real historical conclusion remains: there is evidence, that is to say, of the strong influence of some Mon-Annam form of speech on the dialects of the Peninsular aborigines; and it is obvious that such influence cannot have been exercised without direct social contact of some kind or other. The low state of culture of the jungle-tribes entirely precludes the idea of a literary influence comparable to that of Greek on English, and it follows that if not themselves of Mon-Annam stock, and many of them certainly are not, they must have been in direct contact with a race that was.

We have seen too, that even the Negrito tribes of the North and the mixed Malayan tribes of the South show the impress of the same influence; and it is noticeable that the Mon-Annam element, though seemingly strongest in the Sakai, is considerable in the Negrito Semang, and appears to exist in varying proportions, even in the dialects of the mixed Malayan tribes of the south of the Peninsula: we are therefore driven almost irresistibly to the conclusion that it must have been due to direct contact with a superior and as we may fairly infer, a politically dominant race. There must have been a time, that is to say, when the ancestors of the present jungle-men of the Peninsula were held in subjection by an Indo-Chinese race of the Mon-Annam family, and it seems probable that such a race at some time or other held sway in the Peninsula itself. The only other alternative is to suppose that the so-called aborigines, after having been subjected to Mon-Annam influences in Indo-China, wandered down to their present haunts at a later period. That is a view consistent perhaps with the imperfect linguistic evidence at present available; but apart from the intrinsic improbability of a relatively recent migration of several independent and distinct races from Indo-China into the Peninsula, it is to be observed that the Mon-Annam stock was in former days dominant over a far more extended tract of country than would now seem probable if one judged merely by its present comparative insignificance. Traces of its influence have been detected[30] in the aboriginal dialects of the Kolarian tribes in India as well as in the dialects of independent tribes within the limits of what is now the[31] Chinese Empire, and though the subject is one of very remote historic interest and has only been partially explored, it seems pretty clear that the Mon-Annam family was formerly a very important and widespread group, which has left the marks of its presence in many parts of South-Eastern Asia. Certain[32] it is that in the early centuries of the Christian era the Mon-Annam races of Pegu and Camboja were the dominant races of Southern Indo-China and became eventually the main channel through which Hindu civilization and the Buddhism of India and Ceylon were communicated to the other and more backward Indo-Chinese races, the Burmese and Siamese, who had not then made their way to the southern seashore but dwelt inland while the Mon-Annam races held the coast line.[33] It is therefore in no way surprising to find traces of their widespread influence as far south as the Malay Peninsula. Retreating, as we may imagine, in prehistoric times, before the advancing inroads of Aryan invaders in the Ganges valley and the increasing pressure of the growing power of the "Middle Kingdom," which was then developing into the Chinese Empire, the Mon-Annam races no doubt concentrated their main forces in Indo-China, where after centuries of obscurity some of them, under the teaching of Hindu immigrants, developed the flourishing civilizations of Pegu and Camboja, while an important eastern branch, the ancestors of the Annamese, falling early under Chinese influence, founded the half-Chinese state of Tungking, from whence they eventually spread into Annam and lower Cochin-China.

What then could be more natural and more consistent with the facts now under consideration than to believe that from the south of the Indo-Chinese mainland where the ruins of their old temples and palaces still bear witness to the former splendour of a now decayed civilization, the Peguan or Cambojan race spread into the Peninsula and remained there long enough as a dominant power to make a lasting impression on the ruder tribes inhabiting these regions?

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[30] Mason, Burmah, 1st Ed.; Forbes, Languages of Further India pp. 33, 140.

[31] de Lacouperie, op cit. passim.

[32] Forbes, op. cit, pp. 21, 150, etc.

[33] Exception must of course be made of the strip along the Eastern and South-Eastern coast, which comprised the Kingdom of Champa and was eventually absorbed by the encroaching Chinese and Annamese.

That at any rate is the conclusion to which the evidence I have adduced all appears to me to tend.

There remains the question whether the Indo-Chinese dominion in the Peninsula was that of the Cambojans or the Peguans or both, either mixed together or in successive epochs. That is a point of considerable interest, because closely related as these two races appear to be and intimately connected as they undoubtedly were at former periods of their history, it is nevertheless a fact that their language, letters and general civilization did in course of time diverge and each accordingly left its peculiar impress on the race with which it came into contact, the Peguans handing on their civilization to the Burmese, the Cambojans to the Siamese. Accordingly in[34] western and central Indo-China two distinct but closely connected sets of alphabets, two different modes of dress, and so forth, are discernible, the one derived from the Mon the other from the Khmer race, and both ultimately traceable to Indian sources.

In language however the relationship of these two races is after all more striking than their divergences, and it is hardly to be expected that with the materials now before us, we should positively decide to which of the two the aboriginal Peninsular dialects owe the Mon-Annam element in their vocabulary. The materials now available appear to me to be too scanty to enable us to come to a certain decision and it would, moreover, be necessary to carefully investigate archaic Peguan and Cambojan, as well as the modern forms of those languages. For it is at any rate quite certain that any Mon-Annam influence that may have been at work in the Peninsula dates back a considerable time and has now for a good many centuries been entirely cut off: it follows therefore that a really accurate comparison should be based on the archaic forms of the Indo-Chinese languages and not on their modern vernacular representatives. Unfortunately, with the exception of a few words of old Cambojan found in Garnier's comparative vocabularies, no materials of the kind have been at my disposal, and I have been compelled *faute de mieux* to fall back on the modern colloquial forms of the languages.

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[34] Forbes op. cit. p. 96.

At the same time, it may be worth while to draw attention to a few facts which bear on the question. On general grounds it might have been anticipated that old Peguan and old Cambojan would approximate to each other more closely than their modern representatives; and in the Peninsular dialects we sometimes find forms that are decidedly more archaic than their equivalents in either of the modern languages. We know however from evidence derived from the inter-comparison of the dialects of the Mekong valley that the old Cambojan of which they have preserved the impress, was in several points nearer to the modern, and therefore to the old, Peguan, than to its own descendant the Cambojan of the present day: that is to say the modern Cambojan is certainly in many respects more corrupt than the modern Peguan. That point which is pretty clearly made out by Forbes [35] is best illustrated in the numerals: a comparison of these shows that modern Cambojan has abandoned its old system of numeration and has adopted a quinary system of which no traces are found in the other languages.

It does not therefore follow, because a word in a modern aboriginal dialect of the Peninsula approximates more closely to modern Peguan than to modern Cambojan, that it is derived from Mon and not from Khmer: the old Khmer form may have been quite as close to it as the present Mon form or even closer, if we only knew it.

It must be admitted, however, that in certain cases where an archaic Cambojan form is known, the equivalent in the Peninsular dialects does not correspond with it but with the Peguan. In the comparative vocabulary illustrating the present paper there is no lack of words in which modern Cambojan agrees well with the aboriginal Peninsular dialects and among others with the Johor dialect given by Miklucho-Maclay: [36] but the latter, which

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[35] Op. cit. pp. 49, 50.

[36] Miklucho-Maclay's other dialect has clearly gone wrong: surely its numerals must be;

1	2	3	4	5	6
moi	—	npe	npotn	—	prui
1	2	3	4		

not moi, npotn, npe, prui, as he gives them

I believe stands alone among the published dialects in having a series of numerals extending beyond *four*, has a distinctly Peguan system of numeration and does not agree either with modern Cambojan or with the old Cambojan of Garnier, though it does agree with some of the dialects of the Mekong valley and southern Siam which doubtless point back to a still more archaic form of Cambojan. I subjoin the numerals in question so that any one may make the comparison for himself: for those in the last column I am indebted to the Hon'ble D. F. A. Hervey.

	Khmer		*Mon*	*Cuoi*	*Prou*	*Ka*	*Johor*	*Sakai of Serting.*
	(old)	(modern)						
1.	mouay	muéy	mwoā	mui	mui	moe	moi	môi
2.	bar	pir	bà	par	baar	bar	dua	dua'
3.	peh	bey	pi	pai	pê	peh	npe	hmpèk
4.	pon	buôn	p*a*n	pon	puon	puan	npun	hmpudu
5.	pram	prăm	măsōn	song	chhéng	chang	massokn	mĕsogn
6.	krong	prăm-muéy	tărau	peat	trau	trao	pru	pĕrû'
7.	groul	prăm-pĭl	tăp*a*h	thpol	pos	pah	tempo	——

As to the first four numbers, no difficulties arise: except for the Malay form of *two* in the Johor and Serting dialects, they correspond well enough in all the lists; but the Johor and Serting numerals for *five* and *six* and the Johor word for *seven*, are evidently the same as the Peguan forms and do not correspond either with the old or the modern Cambojan. On the other hand they agree fairly well with most of the forms in Cuoi, Prou and Ka, which from their geographical position can hardly claim a Peguan parentage.

It is clear therefore that the Mon-Annam element in the dialects of the Peninsula points back to a very ancient connection; and as there is so much in common between them and both Mon on the one hand and Khmer on the other, possibly the best explanation of the matter is that the Indo-Chinese words in them must be referred to the speech of the former inhabitants of the lower Menam valley, which lies between the modern Peguan and Cambojan language-fields and which may therefore not unreasonably be presumed to have stood midway between them in linguistic characteristics. It is also the part of Indo-China from which access to the Peninsula is easiest; and to this day a portion of the Peninsula to some extent owns the supremacy of that region.

At this point, therefore, my inferences from purely linguistic evidence must stop and I should be content to end this paper here, but for the corroboration which can be adduced from other sources and which slight as it is, it seems desirable to mention. In the Chinese chronicles of the Liang dynasty (A. D. 502-556) [37] under the heading *Tun-Sun* we find the following entry:—"More than 3000 *li* to the south of *Fu-nan* there is the country Tun-Sun; [38] it is situated on a Peninsula more than a thousand *li* in extent, and the capital is ten *li* (about three miles) away from the sea. There are five kings, who all acknowledge the supremacy of Fu-nan."

Now all we really know of Fu-nan is that it was a large kingdom situated on the southern coast of Indo-China[39] and inhabited by a people somewhat darker than the Chinese who practised certain customs which the Chinese chroniclers describe and, amongst other things, worshipped the Hindu deities. It has been variously identified with Pegu, Siam[40] and Camboja, and perhaps the most probable solution is that at one time it included all three. But if its centre was in the country now known as Siam, it is at any rate certain that its inhabitants were not Siamese. It must not be forgotten that the Siamese are comparatively recent intruders in the southern parts of the land that now bears their name, and that the whole southern seaboard of Siam was formerly in the hands of the Cambojans, at a time when the germ of the Siamese monarchy was a little inland state on the upper Menam owning the supremacy of the Cambojan Government[41]. The Siamese themselves have not forgotten the fact and they admit that their old capital Ayuthia[42] was founded about the year 1350 on the site of an old Cambojan town named Lawek or Lovec which they had taken and destroyed in a series of wars with Camboja. These wars ended in the crippling of the latter power and thus laid the foundation of the greatness of Siam. It is clear therefore that the lower Menam Valley was at one period included in the Kingdom of Camboja and according to Garnier that kingdom extended westwards to the river Sittang in Pegu; this kingdom therefore he identifies with Fu-nan, and hazards the opinion[43] that for some time between the 3rd and 10th centuries of our era Camboja had supremacy over the Peninsula generally, as well as over a a very large portion of Southern Indo-China.

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[37] Indo-Chinese Essays, series ii, vol. i, p. 239.

[38] Cp. ib. p. 248. In the history of the Ming dynasty, "Malacca ....is supposed to be the old country Tun-Sun and the Kora Fusa of the T'ang dynasty."

[39] Forbes op. cit. pp. 43-47.

Logan[44] on the other hand speaks of a Peguan colony in Kedah, as attested by inscriptions in the Mon character found in Province Wellesley; but it may be doubted whether any inscriptions hitherto found in the Peninsula are sufficiently characteristic to prove a specifically Peguan origin: they are, I believe, mainly in Sanskrit[45] and the character is one of the numerous forms into which the Indian alphabet has diverged, but whether Logan is right in distinctly asserting them to be Peguan I have no means of ascertaining. Elsewhere he speaks also of a period of Cambojan influence in the Peninsula, and his view[46] would appear to be that there were two successive epochs, the first of Peguan, the second of Cambojan supremacy.

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[40] Garnier op. cit. pp. 103 (note), 108, 113, 127, (note).

[41] We sometimes hear of the "venerable claims" of Siam to supremacy in the Malay Peninsula: as well might one speak of the "immemorial antiquity" of the Ottoman dominion in Europe. Still no doubt, the Kingdom of Siam is in a manner the modern representative of the old Cambojan Kingdom, just as the "Sultan of Rûm" claims to be a successor of the Byzantine Caesars; but that is all. *v.* Forbes op. cit. p. 23. Garnier op. cit. vol. 1, p. 105 (note).

[42] Crawfurd Embassy to Siam, vol. ii, p. 141. Forbes op. cit. p. 84 but see Garnier l. c. p. 137 note.

[43] Op. cit. vol. I, pp. 116, 125, 135.

[44] J. S. B. R. A. S, no. 7, p. 85.

Moura[47] in relating the history of Camboja from Chinese sources, states that in 627 A. D. the "King of Chon-lap (Camboja) united the whole of Fu-nan under his authority. From this period onward the Chinese chroniclers denote Fu-nan by the name of Chon-lap......About 650 A. D. the countries of Cuu-mat, Phu, Na, Gia, Tac, Vo, Hinh, Seng, Kao, situated towards the isthmus of the Malay Peninsula were united to Chon-lap."

That is all the historical evidence I am able to adduce and it really amounts to two statements, viz. that at an early age a part of the Peninsula was under the dominion of Fu-nan, which Forbes[48] regards as Pegu and which probably included the lower Menam valley, and that Fu-nan and Chon-lap, which latter is certainly Camboja, became united in the 7th century and Chon-lap took over the suzerainty of certain southern states whose names I am unable to explain, but which are admitted to be somewhere in the Peninsula or the isthmus leading to it. In spite of many intestine quarrels and frequent struggles with surrounding nations it may fairly be stated as an ascertained fact that for a long series of ages the Mon-Annam races held the broad river-valleys and alluvial deltas of Southern Indo-China in almost undisturbed possession, and no doubt it is to this period of comparative peace and prosperity that the civilization of Camboja and the Indo-Chinese suzerainty in the Malay Peninsula must be attributed.

Whether their hold on this comparatively distant region was shaken by the growing influx of Hinduized Malays from Sumatra, or whether the pressure of their inland neighbours, the Siamese, compelled them to retire from their outlying provinces and attempt to rally their forces in lands more peculiarly their own, is a question which the evidence of language can hardly be called upon to settle, and which history does not appear to answer. But it seems probable that the latter was the determining factor in the situation; otherwise we should expect to find some traces, either in Malay legend or elsewhere, of the Sumatran Malays meeting with strong opposition when they made their settlements in the Peninsula, whereas that does not appear to have been the case. There is no record,[49] apparently, of the Malays having found an Indo-Chinese race dominant in the Peninsula and there seems to be no tradition of their having conquered or expelled such a race. It is no doubt possible, as I have already suggested, that a strain of Mon-Annam blood still exists in the Peninsula, blended in the veins of the aboriginal tribes in Perak and Pahang who while speaking distinctly non-Malayan languages, which contain a large proportion of Mon-Annam words, are described as quite the reverse of the Negritos in physique, being men of comparatively tall and shapely stature and somewhat fairer than the Malays. On the other hand it is not unlikely that a remnant of the old Indo-Chinese stock, may have been absorbed by the Malay immigrants, and may form some small element in the modern mixed Malay race of the Peninsula. The Malays seem to possess in an exceptional degree the power of assimilating and absorbing individuals of other races, and in the old pre-Muhammadan days there would be hardly any social barrier between Malays and Indo-Chinese. So slight to an outsider's eye was the difference between them at that time that an Arabian[50] authority speaks of the Malays as a branch of the race of Comer, by which he undoubtedly meant Khmer, that is Cambojan. Any Cambojans remaining in the Peninsula, who did not retire into the interior and throw in their lot with the wild tribes, could hardly fail to be absorbed by the Malays.

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[45] Indo-Chinese Essays, series I, vol. I, pp. 219-234.

[46] J. I. A passim.

[47] Le Royaume du Cambodge vol. II, pp. 25, 35.

[48] Op. cit. p. 43, seqq.

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[49] *49.* The account in the " Sejarah Malayu " of the taking of Glangkiu in Johor by the Kling Raja Suran, the mythical founder of Vijayanagar, may perhaps be a faint echo of the last stand made by the Indo-Chinese power in the Malay Peninsula, and although the Raja of Glangkiu is spoken of as a Siamese, it is not impossible that the Malay tradition of an early Siamese occupation of the Peninsula may preserve the remembrance of the older Mon-Annam suzerainty which probably proceeded from Siam before that country had been peopled by the Thai race. Except this first and purely legendary account, there is no mention of the Siamese till some time after Muhammadanism had become the established religion in Malacca, a time which coincides with the period in which they finally broke up the old Cambojan empire and intruded themselves like a wedge between Pegu and the present Camboja. From that period onwards the Malay Peninsula was entirely cut off from the Mon-Annam kingdoms but appears to have been subjected to a succession of Siamese invasions, and it is therefore not inconceivable that floating legends of an older Indo-Chinese supremacy were then by a natural confusion attributed to the Siamese.

Be that as it may, we have at any rate clear proof of a former connection or contact between the Peninsular aborigines and a race of Mon-Annam stock. From Patani to Johor among a great number of isolated tribal communities, which appear to belong to several distinct races and whose dialects are mutually unintelligible, we yet find clear indications of a dominant Indo-Chinese influence imbedded, as it were, in the elements of their speech, the evidence, as it seems to me, of the former presence of a ruling race that has long since passed away from the land.

Before concluding this paper, I wish to point out that the fact of these dialects having much in common has been recognized before and, as I think, entirely misinterpreted. Nearly twenty years ago the identity of many words in the different aboriginal dialects was pointed out by M. de Miklucho-Maclay ; [51] it astonished him and confirmed him in his belief that a trace of "Melanesian" (or as it would perhaps be better to put it "Negrito") blood exists in the Orang Utan of the southern parts of the Peninsula. Some years later, M. de Quatrefages[52] remarked on this fact "there is nothing in it which will not seem quite natural to any one who studies the history of Negritos taken as a whole."

I may be pardoned if, with all deference to an enterprising explorer and a distinguished man of science, I venture to point out that as the words in question are mostly of Indo-Chinese origin, they cannot be adduced to support the theory of the existence of Negrito blood in the Orang Utan of the South of the Peninsula, or to illustrate "the history of Negritos taken as a whole." The Negrito theory, the truth of which I do not for a moment dispute, must rest on other evidence: and I may be excused for adding that we have here yet another instance of the danger of trying to draw ethnological conclusions from philological data without at least a critical examination of the latter.

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[50] Ibn Zaid in the middle of the 12th century. The identity of Comer and Khmer was pointed out by Col. Yule. v. Forbes op. cit. p. 47.

[51] v. J. S. B. R. A. S. No. 1. p. 43.

[52] v. ibid,. No. 13, p. 7.

So much for the unwritten and long forgotten chapter in the history of the Malay Peninsula, which it has been the object of this paper to recall to the attention of such as are interested in matters of this sort. In our time the aspect of affairs is changed: the influences to which the aboriginal tribes of jungle men are exposed are widely different. Year by year words of Malay origin are supplanting their old equivalents in the speech of the aborigines, and the time is doubtless not far distant when, except pehaps in two or three remote districts, the old languages will be altogether superseded by Malay. In other words, the Peninsula has now for centuries past been more closely connected with the neighbouring islands than with the continent of which it forms an outlying part, and the traces of its old subjection to Indo-Chinese influences have so far faded away that it is hard to realize that a closer and more intimate connection at one time existed between them. To collect and analyse such evidence as still remains of an earlier order of things seems to me a work well worth doing, the importance of which as a branch of Oriental research it is hardly possible, as yet, to estimate, but which in any case will not be labour lost. The present paper cannot, in the nature of things, pretend to be more than a slight outline sketch of one side of the matter: it raises more questions than it solves and does not profess to be in any way the last word on the subject. It is to be hoped therefore that this and similar lines of enquiry will be followed up by the more detailed investigations of others, whose opportunities for pursuing them are far greater than such as fall to the lot of any one living in a Malacca district where no aboriginal dialect has been spoken with anything like purity for several generations. To record and study the rude jargons of jungle tribes is not indeed an inviting task and if the matter ended there, it would hardly, perhaps, be worth the trouble: but when it is considered that such researches, trifling as they may seem and wearisome as they may be, are likely to throw a new light on the history of the Peninsula and the relations of the races that have from time to time occupied this region, to establish, it may be, on a more certain footing the ethnology and philology of Southern Indo-China, and to furnish additional data towards the elucidation of the origin of the Malay race, it will be admitted that even the collection of a short vocabulary, provided it be accurate, is a valuable contribution to what is at present an almost unexplored field of investigation. Those who have the opportunity should however aim at more than that, and should supplement every list of words by a series of sentences and phrases illustrating as fully as possible the construction and grammar of the language, dialect, or jargon which they represent, as well as by a careful description of the people who speak it. It is only by the collation and comparison of a large mass of such materials, collected independently but according to the same general plan, that we can hope to attain to a thorough knowledge of the pre-Malayan philology of the Peninsula, which will enable us to fill up many a blank in its history and ethnology, besides contributing an additional chapter to the ever growing Science of Language.

C. OTTO BLAGDEN.

JOURNAL OF A VOYAGE

FROM

India to Siam and Malacca in 1779.

BY DR. J. G. KOENIG.

Translated from his Manuscripts in the British Museum.

Continuation Vol. 2, from page 1.

May 1.—I wrote some letters to Europe, which I delivered into the care of Captain Schott, who was to take them to Malacca, whence they were to be sent on by the first opportunity. In the afternoon I went to an island called Kopran, which was at 1000 steps distance from the ship. My botanical purpose was frustrated by continual rain, and so I looked out for other things of interest. I turned my attention first to a prominent mountain-peak. It consisted of a clayey very fine stone, which varied much in colour; most of it was grey, some was green, black or pink. It did not form any big blocks, but strong ferruginous veins divided it into many irregular parts. This kind of stone is used by the Siamese to write their books with, which books consist of black cardboard. They cut the stone into small sticks, one inch in length and half as thick as a quill. The other kinds of stones were either black schist, rough and porous, or pieces of old corals. The soil itself was light yellow mountain mould. I found two kinds of Holothurians here, one was the kind that has a white stomach and an ashy grey back; it was the rough, stiff Holothuria which is called *Bitshide Meer* by the Portuguese. Some Malays, who came to this island in their Praus and boats, collected them for sale. The other kind was the black one, which have a rather prickly roughness on their skin; they are thinner, softer and longer, and are not collected. There were many kinds of shells here, specially kinds of Neritas, which clung to the rocks, two kinds of patochis, many Chitons, which are also collected to be sold to the Chinese, some kinds of Porcelains, etc. The most remarkable things I found, were some *kreuz hapen* and *ostrea isognomum*; they were in such places where the shore was low and shingly, and covered with a little mud. The *ostrea isognomum* specially are most frequently found under medium-sized stones or between them. The sea-stars were very big here, each point measured about one and half feet, so that stretched out the points from one to the other opposite one were three feet in length, although the real body was not larger than a Dutch ducat. Between the stones I found many kinds of flesh corals, which all had opened. Some of them consisted of angular tubes, which were easily divisible; they were quite yellow and could easily be detached from the stones. Others crept back into their respective holes as soon as I touched them, and it was impossible to get anything else but fragments. To-day I could only find out that their mouths were sometimes $\frac{1}{4}$ of an inch in diameter, they took different shapes and were sometimes oblong, angular, or round; at times they stretched or they were pressed together by others near them. The inside *(Discus)* of this species was of the most brilliant green that can be imagined, and was smooth and convex. The edge consisted of innumerable fibres, arranged in irregular order; they were purple with white points. I could not see the opening of the mouth without a magnifying glass, but as soon as I touched them they all sent forth some water.

The other kind had a sky blue disc, and the edge was yellow-grey. The bottom of the sea was filled with many kinds of *Alcyonius* all of which I had already seen in Trinquemalle. The dark night made me postpone my researches until the next morning.

3.—At midday I went again to this island first as the low tide was setting in. First of all I visited the huts of some Malays and learned from them that they boil the large *Holothuria* first in salt-water; after that they are put on a stand, whide is made of split bamboo, is half a man high, two yards broad and six feet long. They kindle a bright fire underneath this stand, which has the effect of both drying and smoking the *Holothuria.* I saw that they had gathered some fruits of the *Lycas*, which are oval in shape. They were being cut into thin cross slices and put for some time over the fire to be dried. They told me that this fruit is more nutritious than rice in this dried condition, but when eaten fresh it is unwholesome.

After this I went to the wood and found first of all a dry male blossom, afterwards a very young cone with female blossoms, and at last a beautiful perfect male inflorescence, which had a completely oval cone about one foot long. This furnished me with an opportunity to make some minute observations concerning the character in the second *Montissa* of Mr. von Linnè. On the mountain ridges of this island I found some high trees of the *Lagerostrœmia*, as thick round as a man. The bark was smooth and had slightly inducted big irregular scars, and resembled the bark of the *Gujava* though the colour was lighter. A new species of *Tschœmum* grew among *Scœvola* and *Amaryllis Teylanica* and *Sophora Tomentosa.* Near the shore of this island in a sandy place grew some Casuarin trees, which I have already described before now.

4.—I went again to another island, and found some new kinds of plants, specially a tree the blossoms of which resemble those of a *Contorta*, specially those of a *Nerium.* The blossoms, when they had fallen off were also purply-red, like those of the Nereis, but they had ten anthers; five of them stood inside and were connate in pyramid shape a little before the pointed ends; the others stood stood erect at the side and seemed nearly all unfertile. There was no fruit upon the tree; on account of the wet weather most of the blossoms fell down without forming any fruits. I also found a new kind of *Capparis* with oblong leaves and prickly stalks; the large Solomon's ants often covered the whole fruits, and whoever touched one of the fruits could be sure to be covered with hundreds of these biting insects. I came to a place where shortly before a rhinoceros had come on shore. My companions advised me to go back, as the animal has the habit of often returning to the sea to refresh itself in the water from the burning heat of the sun.

In the afternoon I went to another island, and found several *Epidendra* in bloom; some of the blossoms I took with me to describe them. There also bloomed *Cordia Sebestena*, *Guettarda*, *Speciosa*, *Ixora flava*, *Lophora tomentosa*; they were all very beautiful.

5.—It rained during the whole day; I described some plants.

6.—I went to an island which lay one mile northward from our ship. My researches were soon interrupted by the arrival of seven or eight Malay praus, whose neighbourhood is always dangerous for all Europeans. I only saw that the stones consisted of a *Schist*, which was thin, grey and weathered on the surface by the heat of the sun and the sea. Sometimes they were intersected by some quartz, or by some red iron ore; these veins mostly ran down perpendicularly. I also found some traces of splendid corals here. Dark clouds rose from the sea in the north-west and though there was a strong west wind, the sky soon looked very threatening. This, the Malays, and the dangerous storms which we had had a short time ago, combined with heavy rain, made it advisable for me to return. I arrived at the ship just as it was beginning to grow dark. After 8 o'clock the anchor was weighed to go to Tamah, were we had been a month ago.

7.—We had hardly made half our way, and the weather grew more and more stormy. We had had rain and storm every day which we passed on shore, but now there was a fresh storm nearly every second hour. We travelled between the islands of Pullu Penjang and the Lehlands, as far as the French island, but the ship did not advance, because if the wind was moderate we had not enough sails, as some had to be taken down from the upper mast, and if there was a storm the body of the ship alone sufficed to serve the storm in driving us back; therefore the anchor was cast and we were glad to be in our dry cabins.

8.—We tried again to get near the land, and succeeded a little better than yesterday, and about 10 o'clock we went on shore with a boat to the place where we wanted to go, which was at about three German miles distance. We got wet on account of the rain, but the wind though contrary was moderate and at four o'clock in the afternoon we arrived at Tamah.

13.—Until this day we had most violent storms and showers. I botanized in the few dry-hours, but the damp spoiled everything because the houses here are like sieves. Moreover, there was the annoying circumstance that my servant, whom I had sent to the ship in a boat, had been carried away by the storm and everybody deemed him lost.

14.—I went out to botanize; the *monandria* (Gingers) began to bloom on account of the rain which we had had. The *Mussaenda* had some sort of fringe at the blossom, and so they seemed to belong to the class of blossoms, which Burman has drawn in his "Thesauruss Teylanicus," but in reality these fringes are only a projecting Sacinia of the corolla, which has been caused to grow by the continual wet weather. I had the pleasure of seeing many specimens of *Papilio priami* seeking the honey out of this beautiful bright red blossom. They were later than all the others, as *Hector*, *Helenus* and many other kinds had already visited these blossoms.

I found some very rare chrysalis on the shrubs, which I could not compare to any other kinds, and which made me hope for some fine *Papilios* in the future.

15.—The weather continued to be showery, but I tried to find some object of interest. I obtained to-day a somewhat damaged specimen of *Papilio priami* and many other kinds, but as the blossoms of the *Mussenda* grew very high up and this was the only tree in blossom I had to content myself with having seen these beautiful *Papilios*, A Chinese told me that in Pegu no real silver ovin is used. The silver is smelted together into big pieces, and smaller pieces are cut off according to the present necessity. The value of the silver is taxed according to the finer or coarser crystalline figures, which form as the silver gets cold.

16.—I obtained some plants unknown to me. I described two kinds of *Contorta*, as I succeeded in finding both their frints and pericarp. They grew frequently in such places which are at times flooded by the sea. What is peculiar in the blossoms, I mention in my description. One of these plants, which had thin threadlike twigs, I found climbing among the bushes specially on a very thorny shrub, and as I searched carefully for the pericarp. I found a fruit which was three cornered pointed and smooth and I first thought it to be the fallicles of this *contorta*; but what struck me as peculiar was that no milk came out as I broke them. The smell which they exhaled was a strong smell of orange. In this manner I discovered the tree which Rumph describes in the 2nd volume of his "Herbarium Amboinense," and calls *Simorelli;* he has given a drawing of the same on the Tab: 32, I afterwards saw many of these trees but did not find a single blossom ; therefore this kind remained unknown to me.

17.—We had again rain all through the day, and I had news, that my boy was still alive, and that he and his companions had lived on fruits and leaves in the island of Pullu Panjang, where tney had been for 5 days.

18.—I went out to get some insects. I found several, but most of them escaped to the top of the high trees.

19.—I described a new peculiar *Pentandria.* In the afternoon, after it had rained a little, I found the biggest *Phalena* just crept out of the chrysalis.

20.—I described two *Epidendra*,and found some insects ; the weather continued to be showery.

21.—I went out again to search for insects, but as I was lucky enough to find a new *Pteris* and the *Acrostichum Digitatum*, I stuck to botany. I found moreover a *Pentandria* with creeping stalks and with white, funnel-shaped blossoms, which I described. Its leaves resemble those of the *Hydrocharis Morsus-ranae* or the *Cochlearia*, *Psychotria.*

22.—I took the road, leading to Cockreu, which was very muddy and often intersected by rivulets. I found a large *Scirpus* a *Laurus* with sky-blue blossoms, which at times had seven and at other times eight stamens; generally two or three of these stamens were connate in each blossom. In a very dark wood, often traversed by the rhinoceros, I found on their dung a special kind of *Boletus Stipitatus.* The roots consisted of a bulb; it was club-shaped, irregular, covered with a black skin on the outside and inside it was quite white, rather hard, and a thick as the point of the little finger. The stalks were about eight inches long, smooth, bending, stiff as thick as a straw, black, brown, and white underneath the hat. The pilens was umbrella-shaped, round, and had a small hole at the top. It sends out a sort of white dust. I found *Clerodeudron flamma Sylo. Maximum* under a *Sagestrocmia*, with perfect blossoms. The first time, I saw this plant in Kara Nicobar, and afterwards near Cockreu. The *Polygate*, whide I have often seen in India, the one with the yellow blossoms grew here frequently in the meadows, but the rainy weather had spoilt it.

23.—I went again to the place in the wood which is often flooded by the sea and found several *Epidendra*, two of which

I described. One of them had a Hypomochlion like that of the Contortis, but the glandula was more fastigiate in two bundles, each of these bundles containing three glandulas.

24.—I described some *Epidendra* and searched for insects in the afternoon. We had still some showers, but they were of short duration. A tiger visited our house, but was satisfied with only one goose for this time, which he carried away with him to his hiding place, which was about 200 yards from our house in a dense opening wood at the back of the house.

25.—I collected some insects and described the smallest *Epidendrum*, which was of the kind called *herba supp.* by Mr. Rumph. The leaves are swordshaped, and one sheathes the other. The blossoms grow together in a single thin fine spike. They are verticillate, very small and red in colour; the fruit is ballshaped.

26.—I went after some insects, and had the good luck to catch two couples of *Papilioo Priamus.* I saw several large *Papilios Achivi*, one of them was twice as large as the *Priamus.* The upper wings were black and those underneath were white, with black veins and red spots. I also saw another very large species with black upper wings and yellow underwings with black veins.

27,-28.—I continued to collect insects. Towards evening I met a wild elephant, from which I had to escape. The bishop of these parts told me that the leaves of the *Sussa Radja, Rumph*: Amb. P. VII., pag. 29, Tab. 15, are used as resicatories.

I described a kind of laurel, the flower-stalks and calyx of which are of a beautiful orange red colour. The corolla was only small and violet; it had only eight stamina. The anther had a lancet-shaped spur, which was also purply-red.

29.—I went again to search for insects, and among other rare specimens I caught two *Priami* and some very pretty *Sphinxes*, the wings of which were quite like those of the *Phalina pyralides.* I described an *Alisma*, the Cotyledon-leaves of which were lancet-club-shaped and fleshy; the others were heart-shaped, only the broader ends were not round but pointed. The calyx consists of three sehals and therefore the whole blossom forms a triangle. The corolla also consists of three petals, which are larger than the calix and white. There were not more than eight stamina, three and three growing together, and the remaining two also grew together. This was the case in most of the blossoms; among ten blossoms which I opened, only one had nine stamina. They have no receptable for honey; it must be a *Ramunculus*, and grew frequently in pools where the mud was deep.

30.—We went to our ship, which lay in the harbour, but we had much trouble to reach it, on account of the many trees floating in the water, cast there by recent storms; however we arrived at midday.

31.—I went to the larger Pullu Salang, which is only separated from the smaller island by a narrow passage, it is twice as large as the smaller one, and lies paralell with the land, stretching from North East to South west. It was here that I first found some *Kreuz Ostern* and some *ostrea isognomum.* I intended to collect some more of them, and had the luck to find about eighteen of the first kind. Higher up on the shore, higher than the sea-water would rise, I often found that plant which I had seen between Bangkok and Chanthebuhn, and which at that time already I believed to be a kind of palm. I am even more certain on that point now, because under the fleshy skin, which is very smooth and shiny on the surface and of the most perfect sky-blue colour, the kernel is horny and therefore resembles the nuts of the different kinds of palms very much. There were two species here; one of them was the species I have already described before. The second kind had a much longer racine about a span long. The fruits grew sometimes three or four together in a bell-shaped calix; each of the fruits was oblong, smooth and not of the same intense sky-blue colour as the first kind. I searched very diligently for their blossoms, but till now I have not been so lucky as to find any.

On the mountain ridge I found a kind of fern, which had both very large pinnatified leaves and simply pinnate ones; and they were the largest fern leaves that I have ever seen. The fruit-bearing leaves were somewhat smaller and divided in characteristic lines. The *Papiliones* here were of the same kind as those which always live in dark shady forests; they were of a brown colour and beautifully speckled; they were of an unusual size,. The high forests here consisted mostly of very prickly leaves, as Rottan and other kinds of palms: these prickles tear both skin and dress if one wishes to pass through them quickly, and so my servants and I had to desist from penetrating any further.

I found nothing new here as regards the formation of stones, only they seemed to be more intersected with quartz. The hardened clay was also more vivid in colour. After low tide we returned to our ship, which lay three miles from this island.

June 1-2.—I had an opportunity to send some intelligence of my present condition to my friends on the coast of Bengal, as Captain Peters returned thither. Captain Peters is a very merry, industrious, honest, and obliging man, and so I used part of these days to write letters. The rest of the day I cleaned my shells, which might otherwise have proved unpleasant for the ship on account of their commencing putrification.

3.—Captain Peters took all my letters. His ship took tin from our captain and left the harbour in the afternoon to sail for its destination. My best wishes for a happy and speedy journey accompanied him.

4.—I went to Pullu Jambu, an island, which might rather be called a land-point because only a swamp, which is only flooded at high tide, separates it from the island Junk Ceylon. It has the same direction as the two Salangs and on entering the harbour it lies on the right-hand side. It consists of two middling high but narrow mountains, which are separated by a valley. The front part of this island is closely covered with high trees; there seems to be one place in the valley which is not overgrown with trees, and also a hill, which lies in front of the mountain furthest inland, and seems not to produce any trees, but is covered with a kind of light green grass, which gives a very pleasant view in the distance. Unfortunately however this grass grows to almost a man's height and consists of a kind of sugarcane, which according to my former description is a *Sacharum diandrum*, so it is more preferable to look at it from the distance than to be close by. The foot of the mountain consists of a hardened many-coloured kind of clay, and here and there one can see some schist at the southern side; the rest of the mountain consists of yellow-red clay, much intermixed with mould.

The bamboo and the sugarcane made this island a favourite resort for elephants, therefore as soon as one comes into the jungle, one finds many paths made by the elephants, and that these paths really originate from them is shown by their dung, which one finds everywhere. I was told that there were specially white elephants with their young ones living here, the latter however were of the ordinary colour; but I should not like to pledge myself for the truth of this assertion. I mention at the same time that the white elephants are considered as especially sacred and valuable among the Siamese and Barmans, and are reckoned amongst their gods. In the picture of their idol Potho, or as the Dutch call him, Budduk, one often finds white elephants drawn; the animal is generally represented with his trunk uplifted in homage of the god.

However, it is a very wrong idea that because this animal is rare it is of greater value, and we also make the same mistake in paying great sums for such an animal, if it can be bought. The elephants are like the white niggers of Maupertius, the white monkeys, rats, mice, sparrows, ravens, beetles, and some such animals. The colour is surely a kind of skin disease cause by the sap of the nerves, and all these animals have something repulsive. I have seen many such animals here in India, and lately the son of the Loximannies, prince of Quedar, presented our captain with a white swallow of the kind that build the celebrated bird's nests. He called this bird the King of swallows, though he was a Mohammetan. These kinds of animals are even hated by other animals, *e.g.*, the white ravens of Ferröi.

Among the special plants which I found here, there was a large tree of a *Cargota urens*; it was not of the common species. The racimes were very long, about two men's length between the lowest leaves, and were divided into small alternate brown sheaths. Most of the fruits were already ripe. They had a smooth, fleshy, blue skin and were as big as pigeon's eggs. The nut had a hard outside. The outside of the kernel was very hard and had dark brown veins, but the heart was very soft.

I obtained here two kinds of *Monandria*, which I had never seen before. One of them is in shape like the *Ingofeher* of Mr. Rumph, but it is not this kind. The oblong pointed cone-like shape is of a beautiful crimson red.

The second kind has its blossoms at the root, growing in a thick bundle; the lower lip, which is the biggest, is of the most beautiful carnime red colour, like the *Amaryllis* *formosissima.* The edge is of a beautiful orange yellow, wavy and has sometimes the appearance of being slightly torn. I, described both these plants. People here eat both the blossom and the fruit, which I learned to my disadvantage, because out of four bundles of blossoms, two were eaten by the time we came home. To-day the four English ships lying in the harbour celebrated their king's birthday with many cannon shots.

5.—I was again in this island, and obtained a remarkable big species of *Tradescantia,* which I described. There were many other kinds in blossom, but they had no fruit; among them were two kinds of *Echites.*

I found a peculiar *Epidendrum* with blossoms and fruits, and have called it for the moment *Orchioideum*[a].

In the afternoon I went back to Tarnah, where we arrived late in the evening.

6.—I went out to botanize and to search for insects. I described a peculiar kind of small *Polygala.* I found a very curious *Monandria* which had an oblong narrow spike between the middle leaves, but, as there were only five open blossoms on three plants, I postponed the description.

I obtained a *Lacerta volans* to-day, which I prepared for drying.

7.—I went out to botanize and to search for insects. I obtained three kinds of *Epidendra* with blossoms, and described them. I also found a *Triandria,* with a superior tristyled flower, it cannot be classified among Mr. Linné's classes; the leaves resemble those of the *Vallisneria.*

A Lemur was brought to me to-day. It was of the size of a small cat; the head was round, the mouth black without whiskers. The tongue was broad at the end, rough on the surface, and smooth underneath. Underneath the tongue there was a small hinder tongue; it was lancet-shaped, had stiff straight fibres, was white, horny and much smaller than the real tongue; at the root of the upper tongue it was spike-shaped. The front teeth were all pointed; one of them on each side was longer in the upper jaw as well as in the lower one. It has three pairs of grinders at each side. The eyes are round; the iris is rust-coloured and projecting, the pupil is only small. Round the eyes there was a black ring of short hair.

[a] *Aratochilus orchidous.*

The nails of the front feet were round and flat at the end; the hind feet had also the same kind of nails, only the hindmost toe had a pointed bent nail, which was rather long and black. The hind paws were longer and stronger than the front ones. The whole body was covered with soft, rust-coloured hair, which was white at the ends. The hair underneath was woolly and grey. From the forehead ran a dark brown line, ending gradually at the hindmost haunches. The tail ends abruptly and is quite short. The animal has a creeping walk and always bends the head.

It climbs, or better, creeps up, with great agility. When it is skinned the body looks long and thin.

8-9.—I went out botanize and to search for insects. I described a *Contorta* and a peculiar kind of *Epidendron*, with awl-shaped long leaves and a fruit which had almost the same shape as the leaves. Early this morning my boy chanced to come across the haunt of a big tiger, but the animal seeing himself between my boy and myself with my companions ran away from us in great haste.

10.—We had violent rain and a thunderstorm, which ceased in the afternoon; the air was hot and oppressive.

11.—I obtained a *Monandria*, very much like the *Globba*, which Mr. Rumph describes in his 6th part. I frequently found blossoms and fruits of the same and described it as minutely as as possible among my monandrists, page. 16. The fruits are almost ball-shaped and as big as ablue plum; the surface is smooth, fleshy, and blood-red. Inside the fruit has three divisions; none of the fruits were ripe as yet. The blossoms are the smallest among the monandrists of Junk Ceylon, which I have described hitherto; they are not longer than the *Lamium album*, but much wider.

The blossoms and calix decay on the ovary, therefore the whole bundle of blossoms has always a decaying appearance, except when they are just in full bloom, or have not attained that stage yet.

12.—At breakfast I was treated to some rhinoceros hide; I tasted some of it for curiosity's sake, but there was little taste in it beside that of the manifold spices, which are used in its preparation. It gets quite soft by being boiled for a long time. It is brown and half transparent and has been cut into long narrow strips, which have been soaked and boiled for a long time. The boiled hide is about one finger thick. I obtained a piece of raw hide on this occasion. The rhinoceros are said to visit this island from time to time.

In the afternoon I described a *Decandria* which has beautiful yellow blossoms and a peculiar kind of capsule. There are three star-shaped capsules, flat outside and convex inside, growing together in the shape of a pyramid. The number of stamens varies from nine to eleven, but generally they have ten. As it blooms in the rainy season, one finds several *Luxurirendes.*

I also described a peculiar kind of *Epidendrum*, which had only a few leaves growing on the ovary; there are two on each ovary; they have very short stalks and stand in a horizontal position. The blossoms are boat-shaped, growing on a thin tube of three quarters of an inch long, which has some small compressed fragile sheaths instead of a calix. The lower petal is the largest, and encloses all the others. At the obtuse ends two pointed lobes project a little; between them are two erect lancet-shaped pointed small lobes as high as the two others; they form the lower obtuse end and enclose the truncate nectary; the other end rises a little higher, is smaller, a little puffed up, or hollow and round. The end itself is round. At this end a fourth lobe grows which is covered a little by the larger ones; it descends with a bend, is club-shaped, and reaches with its wider end over the end of the truncate body, covers it, and is here stiffer, thicker and of an orange colour. It is moreover convex on the outside and therefore concave inside. The whole blossom consists of a thin milky white Corolla, and has much resemblance to an *Impatiens noli me tangere* not quite open, and is very much like it in size as well. In most of the *Epidendra* it is impossible to consider their blossoms to have several petals and surely they form more than one class. I have made a more minute description of it among my *Epidendra* under the name of *Epidendrum nudum.*

13.—I went to the ship to look after some of my shells and corals, and arrived there towards evening.

14-15.—I went to the big Pullu Salang, where I only found about a dozen of *Kreuz-Ostern.* On a *Cordia Sebastena* I found a splendid large *Papilio* of the genus *Danais.* It is white, the ends of the upper wings are of a splendid orange yellow; the under wings were white and had black edges; they are speckled at the back with a kind of dirty yellow.

I have already often observed that the wings of the Papilios have the same colour as that of the blossoms on which they live. A few years ago I saw a very large Papilio sucking the honey of the *Justitia Echolium;* it had the same sea-green colour as the blossoms of the above-mentioned plant. In this instance a great part of the wings had the same colour as the Cordia, which is of a beautiful orange colour, and this circumstance made me search the next day for some more specimens, but I only caught six.

16.—I went quite early to Pullu Jambo to botanize and search for insects. I found a big tree, which had funnel-shaped blossoms, which were divided into five lobes at the mouth and were superior. It resembles the family of the *Gardenias.* The fruit is oblong, five-cornered, with irregularly large sides, but underneath a thin fleshy skin is a hard nutshell, which contains a large amount of small rather fleshy seeds, disposed like eggs in a nest; this I have also often observed to be the case in many kinds of wild growing *Gardenias* on the Coromandel coast.

In the afternoon I searched for molluscs, corals, and the like. I have already said before that among other corals, there are many fleshy corals on these shores. When the tide is very low they lie on the stones in a very limp condition, as the fleshy parts of the head lie in the anatomic balls, but as soon as the water rises again they revive and regain their habitual tone. I happened to touch one of these fleshy corals when the tide was high; it had a broad base, the edge was sharply bent and had many intersections; it was very fleshy and flesh-coloured; I must have touched it too hard and it broke. At the same moment innumerable animals came out of the cells and pores. These animals resembled *Neries* exactly; they also had the broad stripe underneath and a narrower one along the back, and ring-shaped stripes near the mouth. The mouth was surrounded by eight feathered arms, which were white in colour, while the rest of the body was coffee-brown. Under a half inch microscope they seemed to be about one inch long.

This chance discovery made me repeat this experiment and I tried to vary the manner of breaking the corals. I succeeded best when the water began to cover the coral. Those which had been covered by the sea-water and had dried out several times were rather entangled, but in the one case, which I mentioned before there can be no doubt, because the body and eight principal arms had hardly been covered. All the other stony corals had lost their animals, and this circumstance showed me that the animals are most lively in this season. It would be impossible to describe their different species and varieties in colour, and as my researches concerning them are not of very long standing, I postponed my description until I should have time to make closer observations.

In the evening I was fetched out one and a half mile, to the ship of Captain Welsch, which had just arrived on the coast of Sumatra. His child was not well. Although I lost some time in this way, the captain made up for it amply by presenting me with the beak of a bird, which he had received in Sumatra on the Padidir coast. Mr. Grew has described this beak before, but very incompletely. It really belongs to the *Buceros Rhinoceros.* It is not probable that this bird should live on carrion, because the beak is much too weak, it is more likely that the people here are right, and that he lives on fruit like the *Buceros nasutus*, which also lives here frequently. The horn on the beak resembles the shell of lobsters both in substance and colour. The Chinese believe a stone of wonderful virtues is contained in the beak of the Buceros and as they buy all the specimens they can get, these bird are very dear here.

18.—I went again to Pullu Jambo. I found a kind of *Amomum*; the blossoms were white and grew in bundles; the fruits were covered with fibre. The leaves are very much like those of the *Amomum* with the single large blossoms, but their fruits grow close to the root. I described the *Amomum.* Near the sea I found here many *Alcyonia*, which were of a pale fleshy colour and had many cylindrical branches. *Holothurians* were very frequently between the stones on the shore, and also the shiny, many-limbed, transparent *Holothurian*, which has a red stripe on either side along the back. The first kind I found during the first days of my return in the island of Cockren, and I have then already made the observation that if one tries to pick them up, everything that they contain in their bodies runs downwards so that they swell out at the lower part and augment in weight, and this causes them to break near the point where the finger touches them. The shiny skin burns the fingers, like that of so many other molluscs. As the weather was fine, I often had an opportunity of counting their eight stretched-out arms distinctly; they are about two inches long, and between two or three lines thick and are a little compressed, at both edges and at the inner side they were covered with projecting warts; the colour was grey, less transparent than the rest of the body. Many of these molluscs were here hardly as thick as a thumb and about three feet long; those which I had seen before were much larger. Among the many fleshy kinds of corals there were some which were shell-like and cupular. Their projecting edge was curly, with many folds and bends; there were many threadlike arms at the edges which could be stretched out as far as an inch, and as the flood rose they made wave-like movements. The other part of the body was brown on the concave side and red on the outward side. At first I deemed this fleshy growth to be a kind of coral, but as soon as I touched it the arms were drawn in, and when I wanted to pull it out by force it crept deep into the ground, spirting some water from its centre. I dug more than half a foot into the sand to find the root, but I had not yet dug deep enough. It was without doubt an *Actinia*, but a very large kind, the diameter of some being half a foot, not counting their arms. On some old coral remains polypus had fastened, they were all threadlike, close together, more than an inch long and coffee-brown; they also were soft and fleshy. It was impossible to count the number of their arms in the water, they could only be distinguished on account of their white ends; as soon as they were taken out of the water they formed a tangled mass.

The peculiar thing was that I did not find a single porcelain shell nor an *Ostrea isognomum* in any of these islands.

19.—I went with my captain again to the island Pullu Jambu. He had been ill and wanted to recreate himself. We had many armed people with us, and so I dared to penetrate deeper into the wood of this island, which in reality is only a peninsula. We wanted to go across the mountains, and after we had worked our way through the bamboo and rottan jungle, we came into a forest, which had very high trees and only little undergrowth. I found a shrub, about three or four feet high; male blossoms grew directly on the stem or the branches in horizontal position and they had sometimes not the slightest prominence on which they grew; they were funnel-shaped, the tubes were very thin and about three quarters of an inch long. The limbs spread and were divided into five egg-shaped lobes, which were about three lines wide. The colour is a beautiful yellow, with blood-red stripes. The male parts are: a thick stamen, standing erect (Adelphia), and which first divides into three horizontal parts; at their ends are the anthers, also divided into two parts. The peculiarity of these blossoms is, that in half-grown blossoms the anthers seem to be single and so are only three in number, but when the blossoms have reached their perfection they split and then they form six anthers with very delicate furrows, their colour also being yellow. The female blossoms grow on a high stalk, which grows erect, somewhat compressed, striped and smooth, and has one or two alternate ovate leaflets, and at the end grow one or two, rarely more, female blossoms, which are almost sessile. They are distinguished from the male ones by the greater thickness of their tube; all the rest of the corolla is like that of the male ones. *Pavetta*, which was just in bloom, grew here also frequently, and some other shurbs unknown to me; most of them seemed to be *monandrias*, among them the splendid cone of the *Amonim* showed to perfection. I have described it among my *Monandria*, page 9. It has a carmine red colour, and is often eaten by the Siamese, who call it Kalch. I observed that the ripe seed, which is oblong, angular and black is often eaten by animals, who open the cone. The Siamese told me that the elephants too are very fond of this cone. I saw a peculiar kind of palm-tree, with prickly stem and stalks, which resembled the rotan very much. The leaves were simply pinnate apices undivided or confluent distichous; each pinna had a long rhomboidalshape, and was rather longer at the base and ended in a narrow point; this last observation, and that they are Sadentite on two sides, distinguish this plant from the kind of palm-tree which I described on my journey from Cockren to Tarnah, which was about the 26th March. Afterwards I saw many of the above described trees, but their stem was quite small, and they had neither blossoms nor fruits. We now reached the opposite shore, and saw many large trees of the already described *Gardenia*, the blossoms of which refreshed our invalid with their sweet smell. We turned back to the wood, and after a few steps my captain discovered some beautiful red blossoms, which grew in large quantities upon a very high tree. I soon saw that it belonged to a climbing plant, and my boy, who was trained in climbing, soon brought down some blossoms and fruits. The calix had the same peculiarity as most of the *Bauhinias*, it split irregularly on the upper side. The corolla was like those of the *Bauhinia*, but there were three stamina, which spread out on the petals; the style was like that of the *Bauhinia*. The pods were threadlike, compressed, pointed, a little hairy, indented and woody. The leaves also were serrated at their ends. I was told that the natives of Pegu eat this pod, which has a bitter taste, and causes an indigestion if eaten in great quantity. Not far from these plants, which covered several trees, grew a large tree, of the *Sontarum syloster*, *Rumph*: Amb, Par 11, page 53, Tab. xi. It had no blossoms at this moment, and the fruits lay on the ground, part of their flesh having already decayed, they were of the size of a gunball and most of them were germinating where they lay. I made a small collection of the best among them.

We then came to some high trees, and saw many threadlike stalks which climbed along their stems. These stalks were three-cornered, about as thick as a quill, wood-like, dark brown and full of projecting prickles. Close to the bark they had short strong fibres with which they clung to the tree. The leaves only began to grow at a height of three or four fathoms, and by their form I could see that it was a kind of fern. After many vain attempts, I succeeded in detaching one of these stalks and managed to pull down a good amount of leaves and fruits. I discovered it to be an *Osmuda*, resembling the *Lonchites valubites*, Rumph, amb, p. vi, page 73, tab. 31. However I have seen all the varieties he mentions in Siam, Malacca, Sallangor, and here, and so I cannot consider this to be a variety as well. The stalks are half round, prickly, dark brown, and equal in size almost to the end; the inner side is flat; between the leaves it divides into a few branches. The leaves are distichous petiolate, simply pinnate, and three feet long. The pinna are alternate, bifarious, lanceolate, acute, spreading, shortly-lined, membranaceous. The fruit-bearing leaves have the same shape, and the dust almost covers most of the round leaflets entirely; some of them have at their base leaflets like the other leaves not covered with this dust.

At a little distance from here I found the *Pothos pinnate;* the leaves end obtusely, they are fleshy, and I rarely saw one untouched by the insects. The stalks or roots which climbed upon the trees had not those burning fibres, which Rumph mentions. I only found cones which had already fruits but no blossoms.

As we were descending the mountain I found a small shrub, about as high as a finger; the stems are woody and the blossoms grew in a corepub. The corolla was funnel-shaped, divided into five small pointed lobes; the mouth was bare, deeper, inside the tube there were five authera. The tyle was divided at the end; it just began to bloom and had no fruits yet.

About midday we turned back to our ship, and I tried to arrange my conquests as best I could.

In the afternoon I sent my boy and some of the Siamese to fetch me some beetles of which they had spoken. They said that this beetle builds its nest one foot deep in the ground, by preference in such places where the wild elephants have left their dung. In the evening they came back with fifteen beetles of a very large kind, which resemble the *Scaraboa actecn*. The Siamese wash these insects, fry them, and eat them with great appetite; they assured me that they had an excellent taste, which opinion my captain confirmed, who had himself eaten them, prepared in some other manner. I am convinced that they contain many particles of fat, and that they decay with the most deadly of smells. I am equally convinced, that they are eaten by monkeys and other quadrupeds, which fact I conclude from observing their dung.

The Siamese call these insects *Fhu-zi vel Tzuh-tzhi.*

The weather had continued dry for eight days, the air was cool, and we had east wind, circumstances which much favoured my researches.

20.—I went again to the large Pullu Lalang, to enrich the collection of my beautiful *Papilia*, which I found here on the Cordia, but I was not as lucky as I wished. The weather changed to-day and we had strong westerly winds with rain, and the beautiful *Papilions* flew so high, that it was not possible to catch any. So I continued to botanize and went across the forest to the other side of the island, where I found a bay far reaching into the land. There was very little water in this bay and as all was very quiet I saw many *Scolopaces Pheopi* and monkeys searching for food in the muddy ground, which contained many shells and small fishes.

The monkeys were specially delighted with the oysters, which they knew how to open very dexterously; on my arrival the whole society was frightened and fled away in all directions. Meanwhile I went on to botanize and found a great number of parasitic plants, more than I have ever seen together in so small a space. There were many kinds of *Epidendra*, among them one species which I have never seen before. They climbed with their roots to the very tops of the trees. The leaves came out of a compressed somewhat tessellate wrinkly green shiny bulb. The flower stalk grew out near the base on the edge of the bulb and this stalk as well as the outer pericarp were covered with a brown sort of wool. For the detailed description see: Lit. B. between pagina 52 and 53. *Liter. J. Epidendrum retusum* had fruits here. I also found here frequently another kind of *Epidendrum*, with egg-shaped wrinkly bulbs; it had no blossoms.

I also saw another plant, which I thought to be an *Epidendrum*; it was a climbing plant with white jointed thread-like stalks, which had opposite leaves without stalks; they were oblong, eggshaped, pointed, and had bloodred serrated cross-stripes; the rest was dark green. They did not have any milk when I broke them, and I looked in vain for blossoms.

Among the ferns I found a very large *Oteris*, with linear leaves, three to four feet long, growing together in large bundles; their pericarp seemed to grow almost on the edge of the leaves. I have seen this kind often before, but never so large and in such numbers together.

Among these I found three specimens of *Acrostichun cornutum. Acrostich: heterophyllum, Polypodium lanceolatum, piloselloides, comosum, Quercifolium, Asplenium Chinense, Caudatum, philippense, Osmunda Scandens, Ophioglossum pendulum, Blechnum Orientale, Blechnum Pteroides, aspleinum nidus, Salicifolium* and many more were here in great number. The creeping *Bromelia aborescens Y. Zeylon*, the common kind, the kind growing as high as a tree, the long broad prickly kind, from which the Indians make their best mats with which they cover their goods, and a kind of palm, grew here abundantly, but only the common kind had a male raceme and a large amount of fruits. The rain-showers continued and the wind grew more and more violent. I had to make a good German mile against the wind and the current with my small boat, therefore, I started on my way back.

I saw two quadrupeds lying on the top branch of a tree, one behind the other; I shot twice at them and so did one of my people, but in vain; they remained where they were, without even moving very much. I only reached the ship in the afternoon, on account of the strong wind.

In the evening I went to see the sick child of Captain Welsch, and I had the good luck to learn from him in what manner the Malacca dragons-blood is made. They boil the sap of the flower of the cane *Dsiernang Rotting*, which forms a dark substance when boiled; then they take three or four parts of Damar resin and pound it in their usual wooden pounders until it forms a fine powder: then they mix it with the equally pounded genuine sap of the dragon's blood, pour boiling water over all, form it into a kind of molass by stamping it well and take it out while it is still soft, putting in into proportionately sized little sacks, made of matting. Then the water is pressed out and the whole substance allowed to dry. This furnishes the best kind of dragon's blood. The inferior kind consists of inferior sap and a greater addition of Damar resin. He told me many things concerning the Damar, as he has been trading with it for a considerable time in Sumatra and the Malay coast. He told me that the clear fine Damar is often found among the common damar resin in Quedah, and that just now he had entered upon a special contract with a merchant living there, who who was to pick out a pikul for him, which he could sell in Bengal for a much higher price, as the commercial houses there use it instead of the powder of the Laudracis, to cover spots in the paper. He said that when quite fresh this Damar was greenish white and quite transparent like venetian glass. In the course of time however, and specially among the large amount of inferior Damar, it turned more and more yellow. He had experienced, much to his loss, that this Damar could not be dissolved with common oil, that it burns into hard lumps, and could not be lighted in the fire, at least only with great difficulty. At this occasion he showed me a piece, five ounces in weight, which was quite transparent and yellowish green.

He also said that according to his experience, the Chinese Damar was very much superior if used for ships, but I will not assert that he is quite right in his opinion that there was a difference from eight to ten parts to two parts of oil, and that the Chinese one was much more liquid.

He told me moreover that on the coast of Padri, in Sumatra, gold was hewn from the steep mountains by means of small instruments, and that there were often medium sized grains to be found, rarer real nuggets. He showed me one nugget which was of the weight of eighteen Spanish Dollars. The mountain range where this gold was found was called Laboh, and lay about three days' journey inland. The people living near there were mostly uncivilised, and at times pay for opium with equal weights of gold.

21.—Early in the morning I made preparations to go to Tarnah in the afternoon, and then I went for a short time to Pullu Jambu. I lost my way a little and found a kind of grass climbing on the trees. The leaves and stem were so completely like those of the bamboo, that I first thought it to be this kind, specially as it also crept along on the ground and grew erect in other places. I did not see one among many hundreds bigger than my little finger. I also saw a *Panicle*, the blossoms of which however had all dropped, but eventually I found many ends of this plant hanging down from the trees. The stalk was joined and rough on the surface. Inside it was woody, and hollow in the middle. The joints were about one foot long, and near the end several branches grew out of the points; there were only a few leaves at the end of these branches.

I found another tree resembling the rotan, with a fascicle of fruits, the spadices of which were bright red. The fruits were oval, oblong, smooth, ressile and fleshy inside; they were of a beautiful blood red colour, and were twice as big as the ordinary sized quills. The fleshy part encloses the kernel with a layer of prickly stiff fibres, which were rather loose at the top part. The kernel consisted of an oblong nut, which was exactly like an nut when cut, and contained some red juice, which dyes the linen red when brought in contact with it. Soon after one of my people brought me the male blossom, which had the spathe; it was oblong, bicarinate, membranaceous, white, simple. The blossoms were sessile on the beautiful carmine-red spadi and consisted, like those of the Betelnut, of three semi-orbicular sepals. The corolla consisted of three oblong petals; this blossom was bright red in all its parts. The stamens of this blossom were not quite distinguishable because it was still very small. The tree is well known by the natives here who call it *Gkottschoh*, and use these nuts sometimes instead of the ordinary Betel nuts.

I came to a path in a bamboo jungle, which evidently was a favourite resort of the elephants, and succeeded in climbing down again the steep shore, where I found some buds of a *monandria* hitherto unknown to me, but they were was yet too young for any examination. I found here the female blossoms and fruit of a shrub of which I had only as yet found the male blossom. It was the shrub with the three leaves, and so I completed my description thereof. I went round the island and found a kind of large tree, which was frequented by several *Buoceros*, probably *piperacious*. The Siamese call this bird *Nock Nang*; it only lives on fruits and seldom flies low. The remarkable thing in this bird is that it makes a peculiar noise with its wings at it flies along. I think the chief cause of this is its having at the ends of the large feathers of the wings small points, standing apart from each other, with which they cut the air when flying and produce this rustling noise. I cannot decide whether there are other causes contributing to this noise, as I have only seen them flying along singly or three to five at a time, or rarer still, sitting on very high trees, and I have observed that their feet are very short and most of their plumage black, except at the beak, which is surrounded by a skyblue colour, but I cannot say whether they are feathers of this colour, or merely skin, and the description which the people here give is too uncertain. At my return I got an *Albuca* which I described, and the blossoms of a kind of fruit resembling the *Strychnos Nux-vomica.* I looked about for fruits of the *Echites*, but all blossoms had dropped without leaving any ovary. The *Phyllivea* however had many blossoms and fruits and also the *Erythroxylon*, which grew as a rather large tree. In the afternoon I went from the harbour to the shore, sad that the fine weather was passed, and that we were again threatened with storm and rain.

22.—I arranged my newly collected things and my other plants, which were almost decaying during the time that I had not been on the ship. The *Scarabei* had such a disagreeable smell, that I got a very strong headache; I only wished the ants had eaten the delicate fat, which is in such favour with the Siamese, but however often I offered them this Siamese delicacy they would not touch it.

23-24.—The continual rain made it very difficult for me to preserve my collected treasures, which continued decaying. I described the above-mentioned *monandria*, which had leaves of beautiful red underneath, but had no fruits as yet; and also a shrub, which was a *monandrist* and had a very aromatic bark.

25.—I obtained a few insects. A beautiful bird with a blue beak had come here; it seemed to be a *Inuscicapa* and was of the size of a pigeon. I described a tree, which was a *Matthiola.*

26.—The atmosphere on land was rather unsafe for Europeans during the last days, on account of some quarrels between some English captains and the king; I was therefore called back to the ship. Before I left the land I botanized a little and found a very pretty small *Epidendrum*, which I described still to-day, page 52, lit N.

A Chinese merchant, living at Tarnah, told me that tin was also being found on the height of the mountains, because the violent rain washes the earth away and so uncovers the tin and sometimes even washes this down as well. The old women collect it, and bring it to the smelter, who renders them $\frac{4}{5}$ of what they have brought him, because the prevailing custom here is to give the smelter $\frac{1}{5}$ of whatever he smelts, which is the only payment for his trouble.

All the tin in Pullu Panjang had formerly been collected in this manner, and was not dug for as they do here, and there was enough tin there to furnish many people with an occupation. But Malay ships had often killed and robbed these people, so that in the end they had fled.

On the whole Malay coast people are said to collect the tin in this primitive way and not to dig for it as they do here.

27.—I looked at all the plants which I had lately collected, and found them, to my greatest grief, almost all decayed. The feeling on land was so dangerous, that I prefered to return to the ship, in order not to be exposed to any annoyance, or to the danger of being illtreated by the tyranical government.

28.—I examined some of the infusory animals of the corals. The weather was rainy and it was cold in the evening, which began to be very bad for my health. During the earlier part of the day it was hot, and all my pores were blocked up.

30.—The weather was again a little better and I went on shore in the afternoon and saw some branches of the big *Lagerstroemia* tree blossom; they grew too high for me. In a swampy place grew the *Lycopodium cernum*; it was very high and had some filicibus, but I have not been able yet to find out their fructification. There were also some kinds of *Sictaminis.*

July 2.—I went again on shore and caught some *Papiliones.* I saw a shrub which had three leaves; the blossoms grew in a spica about one finger long, there were two fruits from each blossom; they were oblong, puffed up and as big as a pea.

5.—I spent this day in Captain Light's company, and we could dare to penetrate deeper into the wood, because we had many people with us who were armed with guns.

The first new discovery which I made was a small shrub, which grew like a little tree with only a few branches at the upper end; it might have been two yards high. The little stem and the branches were covered with a black, grey bark, and they were strewn here and there with orange-yellow blossoms, which had the shape and size of the Primula; they grew on a small peduncolo squamuloso, only about half an inch long. I could not make any description of it as yet, because the blossoms were all male ones; the female blossoms which I found were not perfect. The capsulas were tricoco and so resembled the Fatrophis.

We went right across the island, which was covered with a dense forest, consisting of many very high trees; the ground was strewn over with their fruits and we gathered some of them. I found a kind of palm growing in great abundance on the other side of the shore; the stems were high and strong and resemble the Borasso. Most of the fruits had already fallen off. Those fruits which had still their fleshy parts were oval, and had the size of a pigeon's egg. The skin of the fruit was smooth and blue. The fleshy part brown, sharp and stringent in taste, and as thick as the back of a knife. The nut was less oval.

9.—We had had rain and storm during some days. I went out in the afternoon to examine the polyps more minutely than I had hitherto done. At this occasion I found some Actimi, which had been left behind in some hollows of the shore as the water fell. Their arms were stretched out, and they measured more than one foot in diameter. The arms were so closely pressed together at their base that I believed the whole animal to be an Asterias from the distance. These arms were striped in many colours—white, red, yellow, and blue on a grey ground. I found several more, and tried to dig them out, but they sat more than one foot deep in the sand and clung to some stones, so that I only succeeded in unfastening two different kinds. The body of one of them is covered with a rather hard skin, which has the brightest red colour, and when the animal has drawn itself together it is two inches in diameter and is as long as a hand is wide; the skin of the other kind was grey and soft and it had half the size of the other. All others broke before I could unfasten them from the stones.

I could not make out the different species of corals on account of the rapid flood, but their little infusory animals were all hydra. The stretched body is brown and the arms are white and eight in number. These infusory animals clung to different small stones or pieces of wood, and they form large lumps in the sea, but as soon as either the stones or the wood was taken out of the water there was nothing to be discovered upon them than a yellow crust full of small warts. I saw a coloured Doris; the back was almost quite flat, the lower edge was projecting and wavy; the surface had fine scars, the size was one and half inch long by one inch wide. The whole body was black, only the wavy edge was white and had black stripes. I also saw the common Indian Doris, which I have so often found near Jaffnapatnam; both these species do not have the usual opening on their back. The infusory animals of the sea amaranth, *Madrepora Amaranthis*, had all stretched out their arms, which were of a splendid green on the upper side; underneath they were ash-grey. All these arms, which stand in a circle-shaped mouth, are very numerous and like fingers. I have seen them as long as half an inch and even one inch. This mouth in the disco consists of swollen grey lips with fine milk-white stripes; the thin body is underneath this mouth. There are as many different animals as there are little holes in every amarantho, which shows clearly that they cannot be counted among the Medusas, but much rather among the Actinia; all the different kinds of polyps, which live between the stones and were as thick as a finger and one inch long, belonged to this same kind.

I obtained several *Gorgonia*, the animals of which had come out: they were hydra, their body was snowy white and had eight arms which spread out.

12.—The dreadful weather, combined with a feeling of weakness and a disinclination against any work, kept me in for a few days. As it seemed to be fine to day, I asked Captain Light to let me have a boat and a few men: we rowed to a part of the island which did not make it necessary for me to climb. I had already at different times seen a *Bauhinia* in this place; its stem is as thick as a hand, and it first climbs up the trees without forming any branches, only on reaching the top it divides itself into a great number of branches, which spread all over the tree. The bark is dark ashy-grey, the leaves are orbicular, a little divided or cut in front: they are bigger than those of any other kind of Bauhinia. The blossoms were a big Panicula and were in all their parts a perfect Bauhinia. The petals were like the *Iscoralocc*, bright red, but it had only three bending stamina, which were blood-red. The stylus was bent like that of the Bauhiniis, the Legumina linear was thread-like, round, pointed and longer than a finger. One of my people, who had lived in Pegu for some years, told me that poor people there boil the silices and eat them; they have however always a bitter taste and remain hard even when they had been boiled in several fresh waters, therefore if eaten too often they cause a Dysentery or Mal de terre.

I went a few hundred steps up the mountain and found to my great astonishment two kinds of Areca trees. I had often given much money to the natives to procure me some parts of these trees, but they had always asserted that they only grew deep in the wilderness. There was a whole wood of them here, white ones as well as the red kind. At first I found the white kind; it grew as high as a man; the stem was single, thick, striped like that of all palms, without prickles; the bark was green. The crown was moderately large, the leaves pinnate, the leaflets linear, convex at the top, had three strong nerves; the ends were obtuse. The edges of the leaves were smooth and not sharp; the colour was light green. Many trees had fruits and the male spadix still hung down from them, dry and without blossom. All spadices consisted only of a few branches, five or six, seldom more. They divided at the base and not any further up, were strong and not quite a span long.

Many of the fruits of these white Areca nuts were quite small, others were almost ripe and began to turn white. They were egg-shaped, pointed at the outer end, smooth and shiny; the kernel contained some sap and enclosed a nut which had the size of a laurel. The calix, the corolla, and the stylus were like those of the areca nuts.

The second species grew thrice as high; the stem was as a strong hand, the leaves were like those of the other kind and had three nerves. A small young spadix had its spatha membranacea cymbi formis nivea hanging on it still; the spadix was blood-red, and consisted of few branches, which were about one foot in length. They grew underneath the crown, where a leaf had fallen off. The female ones had their spadices a little longer and on them grew some blood-red, oval, smooth fruits, having the size of a plum. From the nuts I judge that it must be an areca, because I found the same characteristics in all the new-found specimens; there was nothing remarkable about the stamina and stylus. The calyx and the coralla have been wrongly described by Mr. Linné. They all have the prickly fibrous substance enclosing the kernel.

I also saw here a peculiar kind of tree which resembled the Calamo Rotan. The stem grew in a slanting manner, and like that of all Rotans it was covered with prickles. It was about one and half man high. The leaves were simpliciter pinnate, and three feet long; their pinna were Rhomboidal, and grew with one side of the Rhombi on the common stalk. They were quite flat, striped with nerves, a little leathery and smooth. The point of the leaflets was lengthened, both edges running down were integerrima, the upper ones laccerodenta. They are eight inches long and four inches wide. I took some of them with me, and also some leaves from the Areca trees, but the negligence of my people and my present weak memory let me only keep a white Areca tree and a leaf of the Rotan, because I carried both in my own hand.

13.—I was seized with a violent bilious fever, combined with cold shivers and general weakness. This sinking of my strength was an even stronger proof of my illness than all external signs. I therefore took an emetic in the evening and I vomitted an unusual amount of gall. The day after I used Tart: emet. gr. uj. in Hij. disolved in water. and continued taking this during the two following days, repeating the emetic again in the evening and again vomiting a large quantity of gall. The violence of the illness was broken, but the total want of purging medicines prevented a perfect cure. Meanwhile my great weakness, loss of appetite, and a rapid decline, threatened to kill me. Therefore I resolved to go with Captain Scott's three-masted ship, which was bound for Malacca, my Captain readily made all arrangements for my passage, as he feared to have a corpse on his ship, while Captain Scott could easily make funeral arrangements at sea; and late in the evening of the 17th I went on board of Captain Scott's ship, called "Prince." We sailed still the very evening. The movement of the sea soon excited the marasmatic quietness of my blood, and the fever broke out with greater violence. I had no other means of cure, than frequent water-drinking.

23.—I went on deck for a little while in the morning; we passed a long-stretched island, called Pullu Trotto, which consists of steep mountains overgrown with trees, and only showing white spots in a few places. The stone must be weather-beaten. We were only one English mile far from it, and could distinguish everything very well through a Dolland telescope. I was told that no people live in this island on account of the many tigers having their resorts in it, but this tale was immediately contradicted by the other statement, that there were many wild boars and many stags living here at the same time.

However many people go to this island, both from the mainland, which is about two German miles far, and from Pullu Lada, which is only separated from it by a channel about half a German mile wide. People gather the Damar, which is found here in large quantities. If these people are obliged to sleep in the island they climb upon high trees. A Diodia was caught at midday, during the calm generally prevailing in the channel. The back was green, the stomach was white, quite smooth without Spina, only near the Ano there were some slightly projecting warts. It was about one span long, and had a very bad smell. I had exerted myself too much to-day by going on deck, and had to pay this with an attack of extreme weakness, followed by a critical fever.

24.—I was slightly better in the morning and could not bear to lie down any longer, although my weakness often made me sink down. I got an *Aphrodita,* which is different from the *Aculeata.*

In the afternoon when I was alone, I tried to go down some steps about four yards long, but I fell down these steps and it was very lucky for me that someone just came to meet me, who prevented my breaking any bones at a wall near to me. However my shoulders and elbows were badly bruised. My usual fever was not as bad this evening, the pain from my fall had taken its place.

25.—We passed the high country of Pullu Lada, which is said to be very populated. The inhabitants live by agriculture, fishing, gathering bird's nests and Holothuriis, and at times they make hunting of men their business, whom they sell as slaves to the Dutch. There is rain or a thunderstorm almost every evening, on account of those nigh mountains, and so the island is very fertile. We happily left this channel in the evening.

26.—We arrived to-day in the harbour of Quedar, where the anchor was cast. Captain Scott went on shore for trading purposes. I felt worse and could not go about much, but had to lie down a good deal. The pain from my fall was very bad.

28.—Captain Scott came back on board and brought with him some tins and provisions, which can be bought here very cheaply. They consisted of pigs, ducks, birds, and chickens; he had bought them from a Chinese living here. The anchor was weighed in the forenoon still, and we left the harbour without taking any fresh supply of water. That which had been in barrels was consumed and we were now obliged to drink that from the cistern, which was very bad and had a horrible smell on account of many thousands of insects having been drowned in it and decaying slowly in the water. The water was passed through a filtering stone for cabin use. My right side, and specially my right arm, was paralysed, so that I could not lift the latter, and if I tried to do so with force I suffered terrible pains in all muscles. I abstained totally from drinking any water, because it was so very bad. I also felt some rheumatic pains in my left shoulder, which were very annoying, but I could at least move the arm with some effort as much as to make eating possible. My illness increased, as I had used all remedies, during our long journey, and for want of any purging medcines the illness assumed the character of an appoplectic slumber, with inclination to bend the neck down very low, but I tried to fight down this desire for sleep as well as I could. A great longing for heating drink made me take several glasses of Madeira wine during the day, they were the only remedy I had. My food consisted in the middle of the day of chicken broth and rice, there was no Aromata on board, and in the evening I had some boiled Sago with Madeira poured over it, which looked and tasted equally bad on account of the bad water, but this was a case of eat or die.

A glass of Dutch beer drove away all paralysis for a few hours, and this circumstance convinced me that my pains were more marasmal or paralitical than rheumatical. The continual contrary south wind made our journey very slow, but Captain Scott, who used every possible advantage, succeeded in bringing us to the harbour of Sallangor on the

2nd of August.—We found there two other large English ships, which had arrived before us. Our captain went ashore directly; we were only two English miles distant from the land, and I sent for some better drinking water to one of the English ships. I obtained some the same evening, which was very welcome to me.

4.—I was refreshed with some excellent fruits, and found the interior watery part of the cocoanuts highly beneficial. I also obtained some purging remedy, which gave me considerable relief, so that I tried to get up a little, although I could lift nothing with the right, and very little with the left, hand; I could scarcely lift the spoon to my mouth.

5.—The captain sent among other things a great quantity of Stock Lack (varnish), which was particularly good and came from Pegu. The gum in many places was more than three inches thick on the little pieces of wood, where it had been heaped up by insects. The surface was rough, like much used Shagreen, and had not the same bright yellow colour as the artificial one from Hamburg. When one breaks it it looks almost like wax in a beehive, only the intercepting spaces are larger, and there is only one single layer. Each cell is linear; the sides are of undetermined outline, but rather inclined to form corners. In many of them there were still the dried up insects, and in some others from which the insects had gone there was some white woolly substance at the end, as is usually the case with the Chermes and Caccos. I picked out a few pieces, which I shall send to Europe as specimens. An Armenian, Mon. Lathier, who had lived in Pegu for a number of years, and had devoted much attention to the insects and the making of this varnish, assured me on his word of houour, that he had often seen these insects building, specially on the bank of the river which flows to the capital Tavoy. According to his version he has seen many very small, unwinged ants run along the ground in thousands, and when they had arrived at the special place they had nodded their heads as if they were pressing something against the wood, whereupon they had come down again. When he contemplated the place where they had been he found a tiny spot. The most peculiar assurance he gave me is that the gum-varnish is quite green in the beginning, and looks like the stalks of garlic. When he took this green gum and rubbed it between his fingers he could press out a red sort of juice; the varnish itself was very elastic and soft.

An English captain, who trades yearly on this coast, says that he has not observed this, but he has seen that the inhabitants sprinkled the shrubs with honey in places where they stood very closely together in order to attract these little insects.

4.—There was a great quantity of *Sango Draconis;* it was white and had the appearance of flour. It was said to be produced in this shape by nature. There were some sacks a little torn, and I examined their contents. I found some fruits of the *Ca amo Rotang* which were oval, and contained the same kind of flour inside. I examined some others and some broken fruits; they all contained this flour, but it was of a darker colour in some of them; at the same time I found some small pieces of Pedicelli of the *Racemo.* I had been frequently told that it was taken from the fruits, and here I was convinced of the fact. It also forms an article for trade, and is as red as the Sappan wood, which they use for dying purposes in China.

5.—We got to-day some tin on board in small square pieces. The tin from Sallangor is considered superior to that of Junk Ceylon, but that in the kingdom of Rhombo is considered to be the best, and is paid with the highest price. There is still an inferior quality, that from (missing in M.S.).

6.—We got some water and provisions on board to-day, and soon after our captain also arrived, who commanded the anchors to be weighed instantly. We sailed towards the Straits of

Calang, and from thence to Malacca.

7.—Early this morning we were at the entrance to the Strait of Calang. This strait is peculiar, as it seems to be situated in the middle of a forest, as the low shores on either side, which are covered with water at high tide, are overgrown with high trees, which were mostly of the kind of *Rhyzophoris* and *Granatus fittoralis Rumph Aricenna*; on the shore grew also the kind of palm without stem called Nipa or Nipang by Rumph. I had found their fructification here for the first time where I went on shore on my journey to Siam. The Strait is generally only a gunshot wide and there was a strong echo which made the song of the birds resound agreeably. I saw here Pica and some Garuli, together with some monkeys, a special kind of Sciuri, with a rust-coloured stomach, also some pigeons, but I only saw them flying. This Strait forms many minor channels and as the water often covers a great part of the land it is very dangerous for everybody not knowing it very well. The length is about four miles, and the ships are only carried through by the high and low tides, which rush through this strait very rapidly. The wind can help very little, as the channel winds very much and is very narrow.

As soon as we had passed the strait the wind was contrary, and we only advanced very slowly along the Malay coast.

11.—At last the current carried us as far as Malacca in spite of the wind (for when the current was unfavourable, we cast our anchor), and with great trouble we managed to reach the harbour towards evening, and we sailed straight up to the town. At low tide the current flows from the Strait of Dragon towards the Bay of Bengal, and high tide brings back the water from the Bay of Bengal through the strait as far as the Strait of Dragon. This same direction of the current is visible as far as the narrow passage between the two island Rabbet et Canni; from there the current takes an opposite course towards the Chinese Sea.

As soon as I came on shore I went to the Governor v. Schilling, who gave me many varieties of — ore, which had been brought to him from Pera, and also many different kinds of dragon's blood, which he had grown himself, so that I had a complete collection of these two things from the Dutch governor; they deserve a better description than I can give of them here for want of space.

16.—I went with the Governour v. Sch. to the country house of one of the richest merchants in Malacca. On my way I saw the wild *Cardam:* and also *Apluda Mutica.* In a swamp grew a *Mimosa folovatis*, and in the ditches stood *Atriculoria, Schoenus aureus*, etc.

The two miles of this journey had made me so weak that I could neither sit nor lie down. Towards midday I recovered a little. The master of the estate told me that the women make everlasting flowers out of the marrow of the Scœvola. The young leaves are eaten by the Malays as remedy against indigestion, they have a very bitter taste.

20.—All these days I had to keep indoors and to take medcines. The lameness of my right hand and especially of the fingers hindered me very much in any examination of plants or in writing. I described a peculiar kind of Buceros, and also stuffed it. But I am not sure whether it is a new species, as I have not got the first volume of Tine's system.

28.—During all these days I was busy writing letters to Dr. Soländer, to whom I sent a short description of my journey; also to Professor Früs, and other good friends in Copenhagen. I sent all these letters, both those for Denmark and for England, with a ship passing here on its way to China.

30.—I made a minute description of the *Amono Zinziber*, *Amono Cardamom*, and another kind of *Monandrist.* It is astonishing how different all the existing description of *Monandrist* are from the reality, and that one has not observed the long cylindric Nectarior.

Sept. 1.—I changed my quarters; in the former one there was too much noise, because many people went in and out.

In the afternoon I went to the garden of a Chinese captain living here. I found many flower pots and flat iron vessels containing many *Epidendron ensifolium*, which lately had ceased blossoming; three pots were covered with the *Oscalis corniculata*, and the *Hydrocotyle Americana*, which were agreeable to the eye on account of their star-shaped shiny leaves; they were also being cultivated on account of their medical virtues; the Malays call them Pangagar-China. There was a beautiful kind of dark red rose on very short and slender stems; they were planted both in pots and at the borders; the description can be found in my Enchiridic. *Chrysanthem indic.* grew in pots, and had remarkably large blossoms. Two *Bromelias*, the leaves resembling those of the large Aloe, grew at the entrance of the garden; one of them had a beautiful wide band along the leaves, which was of a light yellow colour. *Iscora Coicinea* had orange coloured blossoms on one side and white ones on the other. They were a kind of (missing in M. S.) A kind of *Scitaminis* filled two large beds; it it was only cultivated on account of the medical virtues which it is said to possess. The leaves are like those of the *Curcuma*, the roots were only thin and yellow. The people said it had no blossoms, and that the fruit grew underneath the earth. The common Chinese rose grew here everywhere.

In beds along the walls grew a stiff kind of grass, which had narrow, dark green leaves; I was told, that it never had any blossoms, but can easily be transplanted by the roots.

3.—I obtained the permission to visit the high mountain of the fortress of Malacca. As I went up I saw, as I had already often down in other places, the *Polypodium*, which Burmann has drawn in three or four parts in his Fl. Zeyl. This plant undergoes great changes. At first it has single, oblong leaves; soon they divide on one side, and later on they divide into five or more pointed lobes. The green root is as thick as a quill and creeps along the wall; it has every now and then some rust-coloured thin dry scales on its surface.

When I had almost reached the summit I saw, lower down, some *Cassialata*, *Clerodendr. paniculat*, among them a kind of fern, which I held to be a *Tricpomenes odinth?*

The real avenue leading up the mountain is lined with two rows of trees, which are all *Pterocarpi*. On the top of the mountain stands the real flag staff of the fortress, near it a massively built, beautiful church, which however is not used any longer because there has been a new one built at the foot of the mountain, close to the house of the governor, which is easier accessible than this one. The gravestones of the governors, commanders, and consuls are ornamented with such elaborate coats of arms that one night think those buried here to be members of the Nassan and Hanoverian families, though in reality most of them have been peasants or artisans in Europe, and their only merit was that they served as soldiers under some noble master.

I was taken to the governor's garden; the way thither wound through a dense shrubery of *Conyza balsam*, *cassia oriculatis*, and *Guillendia Bondus.* The real purpose which had brought me there was to find the different species of *Aries* in blossom, but I was not so lucky as to find any. Between the stones of the garden grew *Urtica Alienata*; the *Capsicum* with blue black stalks, leaves, and fruits, and some beautiful blossoms grew in abundance near the gate of the garden. The arrangement of the garden did not show any thing remarkable, although there was much opportunity to build beautiful terraces. A little hill was surrounded by a wall three feet high, and on this hill in a hedge grew the *Institia Coccinea*, which looked splendid with their profusion of beautiful orange-coloured blossoms. There were some Tuberoses here with seeds. The tree *Boa Cross Rumphii* grew here and had blossoms, but I only described the male ones.

5.—I went to the garden of an old Chinese woman, who kept several kinds of aromatic plants, which she had brought here from her former large garden after her husband's death. Among them was the Cardamom, a wild kind of *Zinziber*, two other kinds of the *Scytaminis*, one of them leaving lost all its blossoms, the fruits having the shape of a pear, and resembling a bell. The other kind resembled the young Bamboo in its growth, but the leaves were very aromatic. People told me that the blossoms grow near the root, but they are only transplanted from the root to form new plants. *Acmella* grew wild near a *Zugher* bush; the *Polypodium Phyllitis* grew abundantly on an old Sago tree; people took the leaves and put them between their clothes which were agreeably scented in this manner. In a Malay garden I found, in a wood of Mangastang trees, a very beautiful specimen of *Epidendron*, which had an ear at the point, and resembled the *Lycopadio* very much. I obtained the male and female blossoms of the *Strecca Ripa.* This tree is very useful on account of its wood, which is very hard and resembles that of the black palms. It is cut into very long pieces, which are two inches wide and three-quarters of an inch thick, and these pieces are sent to the coasts specially, where they are called Riper and are much used for building roofs.

The collection I obtained to day gave me plenty of occupation during the next day, because I dried, examined, and described the different specimens.

7.—The rain, which had fallen in the night and continued in the morning, prevented me from using the early hours: it caused moreover much decay in the fields and also in my collection

In the afternoon, I walked for about one German mile towards the north east of the town, and saw in a garden the coffee tree with fruits. I collected some of the less ripe ones for sowing purposes, some blossoms I kept for my collection. The way led continually past gardens, where the Chinese plant all sorts of vegetables; their beds were all long, raised, and about two feet wide, so that the water of the frequent rains could easily flow off. They did not observe any other rules in their gardening than those imposed by necessity. Their houses stood near the gardens and were built upon poles, but the cause of this way of building was not so much the water as the fear of wild beasts.

Their fences consisted only of thin pieces of wood, standing apart from each other.

The most frequent shrub here was *Melastonia letis.* I found the two kinds of European *Utricularia,* some kinds of new *Filicibus* which I took home to examine ere it grew dark.

8.—To-day I found in the garden of a Malay a small Monandrist, of the class of *Scitaminum,* which was in blossom. The plants grew in tufts with knotted twisted roots, and have long beard-like fibres at their base. The leaves lie on the ground, they have short stalks and are sheathed one into the other. Between these sheath-like stalks grow the blossoms in small bundles sessile near the root.

The blossoms have a tube of half an inch long, which reaches over the leaves; it is double at the top. The outer corolla is divided into three very narrow parts; the inner lobes stand flat and spread out; two of them are club-shaped and stand near together, the third is much wider, concave and much stiffer, specially towards the middle, it is again divided into four parts. The two parts at the side are small delicately obsolete serrated, and round at the ends. The middle one is divided down to the middle, the lobes are club-shaped, the incision is linear and the edge lightly serrated. At the base before the division it is yellow, the edges of the incision are purple at their base; all the rest is snowy white. The blossom has the size of a large pink. The detailed description is to be found among the Monandrists. It is cultivated in the gardens as a medical plant, and is said to bloom rarely. The root is quite white and has an aromatic taste and smell.

9.—To-day I described the Monandrist more in detail, after I had received some better specimens from the garden. They are kept for medical purposes. It is a pity that most of the Monandrists have no fruits now, so that it is not possible to classify them correctly. This kind has of all those I have seen the most spreading Petala, and I was in doubt whether or not to classify it among those which have the crown divided into four lobes; I have however not done it because they grew together a long way up like in an Ungue; the others hang directly at the tube and have almost a kind of Unguis.

10.—I described to-day a new species of the family of Phyllonthos. I have often found them in Siam, but never with such perfect leaves and fructification. The leaves are here used in medicines for children against any bronchial illness, because they have a sweet after-taste. The fruit has the shape of a pear, but only the size of a cherry, it is snowy white and has no taste, there is just a faint salt or acid flavour. They look very pretty with their blood-red lasting calyx.

12.—I went this morning along the southern coast to botanise and found several kinds of plants which I had not seen before. I found an *Epidendrum ensifor* amongst many hundreds, which had lost their blossoms. *Pterocarp: Drace.* was still blooming.

In the garden of a Portuguese, where I wanted to examine a Sago-tree, I found a great quantity of *Ostea pleuronect*, which plant is often fetched out of the water at low tide just in this month. They are preserved like all the other *Osteas* and eaten like them; their animals are however very small and many of them are required for one meal. I was told that one can only get them at two periods of the year, because at all other times they go down to deep parts of the sea.

After I had passed many gardens, I found a beautiful Monandrist at the foot of a mountain. The blossoms grew in a Strobilum, which was sessile at the root and which had a somewhat spreading edge at the end. It was as long as a hand is wide and half an inch in diameter and the spathes, which were in great number in this Strobilum, and were of different ages, were all of a beautiful red colour.

The stalks with the leaves were, like those of most of the monandrists, biforia. only the leaves were more leathery than those of all others, and have dark stripes. This I have observed in no other species until now. I had often seen *Grevia Miccrocos*, but always without fruit; here was a pretty thick tree, which had both blossoms and fruits.

There were many Malay graves at the foot of the mountain. There is a superstition that whoever comes near a grave, or worse who steps upon it, will soon die, or at least will have some dangerous illness. I took the risk however, and gathered some fruits from a shrub, which was a Monandrist.

14.—During these two days I was very busy examining and describing my new plants. To-day I received four green pigeons, which I described; I stuffed a male and a female one. In the afternoon I botanized a little, and found a very rare Epidendrum, which had folia biforia, sessilia compressa, and a Spica at the end, which resembles that of the Lycopodia completely. I had to postpone the more minute description till the next day, because it had grown too late.

16.—I examined the water of a warm spring, which is situated near the sea, a few miles from Malacca. The water was already a few days old and contained no vestige of *fixed air* (*sic* in M. S.); nor did I find any iron; and there were fewer particles of salt than I have found in any other water. The only thing I could discover were a few alkali minerals. The smell had nothing peculiar either.

17.—I received from the place where the hot spring is said to be some pieces of black, white and red striped Petrosilex; in the middle was a wide white stripe, which seemed to consist of some quartz sand. Very likely it came from the mountain which the Dutch call Ophir.

From some place near here I received some specimens of white Porcelain clay. I tried it with my tongue, and found that it exercised a certain adhesion but did not effervesce. It was not heavy but very fine and does not form a very firm substance. I could not detect any glimmer or nitrogene parts, through a half inch microscope. During the night I put it in some fluid and the liquid did not change in liquidity and colour, neither did the clay. I could not make any examination in reference to fire. The clay can easily be shaped into balls and dries hard, but breaks when one rolls it. It stains the fingers very little.

19.—We had remarkably fine weather yesterday; it was

Sunday. An English ship arrived here yesterday; it is bound for China, but it is doubtful whether it will accomplish this journey because the change of the monsoon in the Chinese sea is so near.

The fruits of the *Cysto Malaccensi*, which are called karamuntin here, were being sold in the streets; they have a sweetish-sour agreeable taste and are filled with many seeds. They are smaller than the common European plums and more eggshaped and preserve their calyx. The surface which is really red, looks white on account of a woolly substance covering it; the juice is red. It is considered an excellent remedy against dysentry and is given to the invalids to cure them of this illness.

20.—I botanized on the high hill, which lies a cannon-shot from the town in the south east, and which is generally called Bukit-China by the Malays, because the Chinese bury their dead here. It is higher than the Paulus mountain inside the fortress, is long stretched, and slopes off towards the south. It consists of red mountain mould and various porous red tufaceous stone. The mountain is quite bare now; formerly it was covered with shrubs, specially with *Melastoma listus Malaccensis*, *Suffa-Radja Rumphii*, *Cassia alata*, etc; now there were only small plants, among them a beautiful *Polygala* with red or white blossoms, a new *Stedyotis Leonurus tartarica Teylonica*, *Cassia Thora*, etc. On the opposite side is a large swamp; in it I found many things interesting for botany. All five spec. of *Utriculariis* grew here often, and both my new plants, one of which I believed to be a *Gynandrist.* I found that they had only female blossoms at the top, and that the male ones grew lower down. The detailed description is in Lit. A. pag. 13.

Nepenthes Cissus, *Smilox*, *Cattuhrus*, a kind of *Ophioryza* were specimens for my Malacca Chloris, with which I shall be busy during the following days.

23.—During the last few days I was very busy with the plants, which I found on the 20th. To-day I hired a man who was to show me a real shrub of the *Rais de Madre de Deus* We went to the forest for this purpose, and found the first shrub half a mile from the town. It was a real *Gmelinia*; the leaves were large, orbicular and ended in a point. The upper side is somewhat rough, the lower side is woolly. The thorns are as long as a finger and the fruits are quite round instead of being obverse ovate like those of the others. The man whose real profession it was to dig for the roots and to sell them, told me, that the further inland this root was dug, the more aromatic it was; he said one had to dig it out at least so far from the sea, that one could not hear the noise of the waves any more.

He further maintained that the root must be dug according to the compass, and that only those growing northward were good, the others had just the reverse effect.

The use of this root is very general amongst the Portuguese, although it has no taste and only a faint sweet odour. They specially use it against any kind of headache. They either grind it with a grater or with the skin of the ray; they then mix it with the urine of very small children, and with this mixture they rub their forehead and temples. They use it in the same manner against eruptions of the skin and against rheumatism. I have not heard that they use it for any internal purpose. The root is sometimes as thick as an arm and has a bark, which is white outside and brown on the inside and about as thick as the back of a knife; it is spicy, salt and very brittle. The woody part is fibrous, shiny, pretty hard, white-grey and resembles the birch-wood, only it is not as white. I for my part believe that the name of the root and the urine have more effect upon the old women, specially the Roman Catholic ones, than the root itself. This has had the effect that the root is often dug for here in Malacca and has been sent to Goa and other Roman Catholic places, but as this creed is rather in decline at this moment, the belief in this consecrated remedy is also in decline.

24.—At last this morning I got some small plants of the *Limones*, which Mr. Obeck describes in his voyage to China, pag. 129 in the German translation. He calls it Pompelnut, like the people of Java, but the Malays call it Limau Burroh, I first saw them in Sallangor being sold for washing purposes, as they have such agreeable odour, stronger than all the other kinds of Lemons. Their leaves are like those of orange trees; only the divisions are still deeper than those of the oranges and the smell of their leaves is much more agreeable.

I prepared myself for a journey to the Water islands, which lie two German miles to the south of Malacca, and consist of several islands lying close together.

25.—At four o'clock in the morning I set out in a hired boat for the Water islands, and ere dawn we had almost made half the journey. At sun-rise we were just opposite Mr. de Wint's country-house, who has ordered some trees to be cut down, so that one has a good view of the principal building. The high mountains, which are called Ophir mountains by the Dutch, lay in the North-east, and were clearly distinguishable. They consisted of some lower and several high pointed mountain ranges. The second range seemed to be highest; the highest mountain was steep and looked as if it hung over the others, pointing northward, which circumstance is used by the Malays to know what direction they have to take.

The mountain is called in the Malay language (missing in M. S.)

At seven o'clock we came to a small island which lay foremost, having the lowest shores at the side nearest the Water islands, and here lay some debris of a ship lately foundered here. The low shore was quite overgrown with *Sacharum diandrum*; higher up were many kinds of Filicices, specially the *Polypadium distichum*, which Burm. has drawn in his Fl. Zeyl, which tried to out-rival the *Osmunda* as regards climbing. I saw many trees without blossoms or fruits which I had not seen before, and so I collected some parts of them. Strong continual rain made my way through the high grass very troublesome. I found many climbing plants, specially the *Cissus cordifolia*, *Smilax laurifolia*, the common large Glycine, which frequently entangled my feet. The grass was almost of a man's height.

I picked up a fruit, which resembled a blue plum, but it only consisted of a kernel and was not as large as this kind of plum generally is. The cliffs were covered with Epidendris, of which I had until now not had any blossoms. *Convolvulus Macrorhyzon*, *Convolvulus pes Capro* were entwined in some shrubs, these being mostly Melastoma. Near the shore there were some Fuci of the kinds already known.

I then went to the large island which lies about a cannon shot distant from the smaller one. They are almost joined together by a long sandbank. We landed at the north ea side, where the shore was low. Near the shore was a pond which had been surrounded by tufaceous stone.

The seashore here was overgrown with *Vite* and *Negundo Scorala*, *Pungu Hort malab : Hibisc liliac; Bromelia Arbor*; *Fl. Zeyl.* some kinds of figs; *Guettorda*, etc. The more sandy parts were covered with *Apluda Cystus Malaccensis; Xyris an nov. Spec. Hedysarum Viscosum* and a new kind of *Scirpis.* In more shady parts grew the *Dracena ensifolia*; the *Fuirena* had fruits.

Eriocaulon quinque angulare grew two feet high. Here grew also *Nepentos distillatoria*, several *Scirpi*, amongst them one resembling the *Corymbosa*, but the stalks and leaves climbing up the trees differed too much from the Corymbosa. The plant is a wonderful kind of Contorta, which has been amply provided by nature that it should not easily die. The real root is in the ground, but when the stalk has climbed a few feet, it clings to the tree by means of kidney-shaped leaf supports (Blatsctuitzen) which cover some fibrous roots. The leaf supports themselves are concave, fleshy, and some are larger than a Spanish Dollar and though they grow alternate, they stand so close together that the edge of the one covers that of the next. This row of leaf supports extends sometimes for more than one foot. After this the thread-like round stalks divide into many long climbing and twisting branches, which at times hang down or cling to other plants in their reach, from where they continue to climb. Other branches ascend and twist round the branches of the trees. But in order to give them proper strength, nature has provided them with other means. Instead of the afore-mentioned leaf supports (Fulcra) the stalk in some parts has many small bladders growing close together; they are heart-shaped and of a somewhat leathery substance. Their surface is smooth or sometimes has small scars and yellow; inside they are blood-red, a little compressed, have sharp edges, hollow inside and puffed up so that the smaller ones can hold three ounces of water, the larger ones even more. At the base there is a large hole, larger than a quill is thick; the edges of this hole are compressed round and smooth, they slope inward like a funnel, but the end of this funnel widens, and bends slightly. Behind this funnel-shaped edge grow some of the principal roots, which send out many minor roots, these again subdividing into numerous hair-like fibres and forming quite a bundle of fibre. These bladders grow as well on the real stalks of the plants as on the stalks of other plants quite closely together, so that the rain can flow into them and fill them. I have first seen this plant in Sallangor, but they had neither blossoms nor fruits, and those I saw there had only the one root in the ground, the branches were nourished by means of small bladders. Perhaps these are the little bladders filled with water which Burman refers to in his travelling description.

These plants here had both blossoms and seed. In some places I saw some seed on a rock, which the wind carried off towards midday. I climbed these rocks and succeeded in getting some ripe seed in a follicule; my opinion is that this plant together with two other form a new family, because the Inbus of their corolla is ball-shaped and puffed up, and the limbus is erect and does not widen; moreover they have a peculiar kind of Fulcra standing round the Corpus Truncatum, which is not to be found in any kind of Contortis; furthermore they have a *Stigma prominulum* in *Disco opicis corporis truncti.* I have dedicated this plant to Professor Friis, because I think he has the greatest right to any new discovered specimen of this class, on account of his little book, which treats the Contortis so much in detail.

A new kind of Lauro, which I had seen in Junk Ceylon, I found here growing between the cliffs, only the stalks were not of the same bright orange colour. At low tide I found again the feathery Fucum, which I had already discovered near Ceylon. *Ulva pavonis*, *Corallina opuntia* as well as *parasitica* and *bubbosa*, stood here in the muddy soil but not in such abundance as in Junk Ceylon. I also found here a *Spongia bobbossa*, *erecta orbiculato Blana margine acuto, viridis.* It is hardly thicker than the back of a knife and the largest have hardly an inch in diameter; rarely they consist of two such leaflets. I often found them near Junk Ceylon formerly.

The town was at a good distance; the weather was changeable, because the rainy season had begun, and all these circumstances, combined with the fear of robbers made me return, although we had weapons with us. The robbers, who come from one of the neighbouring Malay islands, killed and robbed some Chinese a short time ago.

We arrived in town at 8 o'clock.

On our way we passed a place which the crew, who were

Roman Catholics, would not approach. It was the grave of some Moorish Saint, who was said to have stood here with one foot, while he placed the other on a cape which lies at some distance towards the north-west. It is strange that the Roman Catholic Christians have more fear of certain places than the Malays, who in spite of all the errors and superstitions went to this Mahometan grave without fear.

Coriandrum arboreum.

A Happea.

A very beautiful climbing plant resembling the Cassiis. without fruits and blossoms.

The wonderful plant, the large root of which resembles a cat in shape; vide figura in Rumph., Tom 6., pag. 120., Tab. 55, F. 2.

Also the *Nidun germinans* of Rumph; the former had no blossoms, but many minor Bulbi, which I broke off and took to Madras quite fresh still, and they continued to be so till the end of the follwing year.

The second kind I have already described in Junk Ceylon; it belongs to the 4th class of Mr. v. Linn, has *Flor*; *vupèri, Corolla Hypocrateprisormes alba*, hardly bigger than *Oldeul. Umlullata.* The fruit is an oblong, smooth, orange-coloured berry, having double the size of a grain of wheat. Two oblong seeds, pointed at the ends, lie in the juice in very little fleshy substance. I have moreover described them in detail. They eesm to me to belong to a new family.

Vid. Rumph; Amboin. P. vi., pag. 120., Tab. 55, Fig. 1.

END OF VOLUME 3.

SECOND PART OF Vol. II.

Third Continuation of my Journey to Siam.

MALACCA.

Sept. 28.—The previous days I had busied myself in classifying the plants and in making a description of them. There was one tree of medium size; it had branches which were almost straight, and they had no leaves except at the end of the small twigs, branching off from the larger branches. There were many leaves growing close together, having no stalks. It belonged to *Polyadelphia pentagguia.* I did not obtain any ripe fruits, although the tree grew here very commonly. The blossoms resembled those of the *Cystis*, were pretty large and rose-coloured. There was another peculiar tree; it was about the high of four men and only as thick as the arm; it has no branches, and the stem was covered with a bark with many scars. The corolla showed that it belonged to the *Umbelliferœ.* The seed is round, ball-shaped, crowned, and as big as a nut. I placed it among the Coriander family, although this will hardly prove correct.

There were some others which I have either mentioned in my description or in the definition; some others I could not decide upon and deferred their classification till some other time. The big Filix does not seem to be anything else but a *Pteris aquilina*, it was sometimes more than the height of a man.

The kind of stone was granite, intermixed with some white and black mica, and some felspar, there was no trace of any other kinds to be seen wherever I went. A little more inland I found some sand of a quartz-like nature.

29.—To day I obtained at last good ripe seed from the plant of the Gambiers. The pericarp remains closed at both ends, and only splits in the middle at both sides to let the seed out. The seed itself is very small, flat, oblong and winged at both ends, and so it seems to be a *Cinchona.* A third kind I have as yet undecided, although the blossoms have in all details the same character, even as far as the leaves are concerned; only they are cut and have stipula which are winged, bent, and pressed together like the *Hugonia Mystox*, but the young fruits were perfectly oval, although crowned like that species, but they all were also pear-shaped.

To-day all the upper classes prepared for a feast given by the Governor in honour of the now ruling Dutch Governor General of the Indies. His appointment had just been brought by a ship coming from Holland and this arrival was celebrated with many gun shots from the ramparts as well as from the ships of all the different nations which lay in the harbour. All the captains of English ships showed their respect for the Dutch nation, and fired their guns voluntarily; the number of shots varied according to the size and importance of the ship.

30.—The festival which had begun last night continued till early morning. I had the honour to be among the guests, and can only admire the wonderful order which was kept up throughout. This is the more to be admired as there are often excesses commited by hasty natures on such occasians, when there is a superfluity of good things. But the presence of the Governor sufficed to keep everything and every one in order.

Now, after the full-moon, strong rains have begun to fall, and I fear that my newly-gathered specimens of Malacca flowers will be spoilt. I shall not be able to prevent it if the present weather continues.

Oct. 1.—I sent some people to fetch me some Fucus kali[a] from the red island in the harbour. Late in the evening they brought me very little of it, and asked to be paid with three Spanish Matten. The people here, who have so seldom opportunity of any extra earnings, always charge disproportionately high prices for any service which is different from their daily occupation, and this is the reason why one always hesitates to engage other people for such occasions and prefers to do everything oneself.

This Fucus is greedily eaten by the Malays in its natural condition. The Chinese put the plant on their tiled roofs and let it be bleached by the sun, and the more rain falls during the night the more thoroughly the plant is bleached. When it has turned quite white they let it dry and keep it in this state. They also make a refreshing jelly of it in the following manner:

[a] Agar-agar.

They take a good handful of it and wash it in water, so that as much dirt as possible is removed; then they boil it in a proportionate amount of water, until it is quite dissolved, which process takes several hours, the vessel always being covered. When it is quite dissolved they add so much sugar as is necessary to give it the nature of jelly. Some add some spice besides, as pieces of cinnamon or lemon peel. This jelly is also made of other kinds of Fuci as of the *Fucus Mussoides.* I had the misfortune to obtain very little of this plant for a great deal of money. and moreover this little found great favour with the Malay slaves, who feasted on it.

4.—I went to the gardens of Mr. Clas de Vents: they lie almost immediately under the walls of the fortress.

I found a peculiar kind of Areca tree here; the natives attach a special superstition to its fruits, because they believe that they cannot be hurt by anyone when they carry one of these nuts upon them. To my great annoyance the tree was not yet full grown, and therefore it had neither blossom nor fruit I was told that the fruit is a little bigger than that of the common Areca trees. The single leaves were not folded, but quite flat; they all ended in a rounded point and were much narrower than those of these kinds of palms generally are; they had three nerves. The colour of the leaves was yellow-green, as that of the common kind. This is the third kind of Areca tree with three-nerved leaves which I have seen on my journey. The tree really does not grow in these parts as a rule, but it was brought over from the Bornese islands as a rare specimen. The Malays call it Pinang-Pennardar[b] (Arecca Olevacca). A Malay told me that there was another species, which according to his belief had much greater power still.

The front part of the garden was full of all sorts of fruit-bearing trees, as Areca, Cocos, Mangos, Jambo, Cynomorium, Cauliflorum, Mangostangs, etc. Behind this garden there was a kitchen garden and then followed yet another garden which beside Coco and other trees, contained several medical plants. Among these were a great quantity belonging to the family of Mr. Linné's *Scitamina*; they were: *Cardamun Curcuma*, a specially big species of the latter, *Zinziber vulgaris*, and *Zinziber Spurium.* One specimen of this class was very peculiar. It was taller than

[b] Prob *Pinang Penawar Actinorrhytis Calapparia.*

a man; the stalks were single and had leaves which did not stand more than three inches apart; they were spreading, oblong, and pointed, of the same character as those that all these plants have. Near the end the stalks were bent in a spiral and bore a spike which was as thick as a fist and about a span long. The blossoms grew close together and formed nine regular rows, being separated by deep furrows, which were due to the fact that the calyx was thinner at the end; these furrows terminated in a spiral. The colour of the calyx was blood-red, smooth, and shiny, and looked very pretty. The blossom was big. I only found one on every spike which was in full bloom; they are bell-shaped, opening wider at the end and having an irregularly serrated edge. At the back it splits as far as the tube near the ovary, and the left folds over the right, and so gives the appearance of a paper bag, but in the calyx they open again wide over the back of the stamen and join the outer corolla. This corolla which I have first described is only the inner one, but it shows more on account of its size. The outer corolla consists of three equal lancet-shaped parts; they are pressed to the inner one, pointed, and have smooth edges. They are beautifully white, smooth, fleshy, and shorter than the inner ones. There is still to be added that the shorter corolla curves a little, so that it stands quite horizontal, and has the appearance of a convolvulus blossom. The detailed description is among the description of the Monandrists.[c]

I obtained many specimens of all these plants to dry and describe, and also some roots for transplanting.

5.—During the whole morning we had a strong storm, so that the lightning seemed to come from all directions and there were also some heavy showers of rain. I examined my yesterday's conquests, and put them as much as possible into proper order; but the plants dried very slowly in this rainy weather. For a few weeks there has been continual rain, either in the daytime or very strong showers during the night. At midday it is very hot, and the mornings and evenings are cool. This has great influence on people's health, many of them feel ill by the constant change of temperature. Some of them had great pain in their feet combined with fever, others suffered with dysentery.

This atmosphere also affects the plants which I meant to dry;

[c] Evidently *Costus speciosus*.

it makes them decay and makes spots on them, although I took infinite pains to keep them locked up during the damp weather.

7.—In these days I obtained a Didynamia of the second order, which by the natives is used against leprosy, an illness frequently occurring here, specially among the poorer people. One sees them at times begging in the streets with bent swollen fingers; at times their fingers have even quite fallen off.

The government here has a hospital for these people further inland, but I could not learn what progress the doctors are making there. The use of this remedy was unknown to the man who had brought me the plant, as only the negroes know of it. I made a botanical description of it. The flower calyx has only four leaves; the two outer ones are connate heart-shaped and big; the inner leaves are quite narrow, bent back, and small. The blossoms resemble the Columna (ringars).

The capsula is compressed, round, and resembles the Rhinanthus. What is more remarkable in this plant is that the anthers are attached to the longest stamens and run down to the tube for an equal distance. They are ball-shaped and produce a sort of yellow dust. The shorter stamina grow in a half circle at the lower part of the blossom, and afterwards also run down in the tube. At the end they are connate and the anther form a kind of cross or an English ×, but so that they separate in the middle. They are white with a blueish tint and the pollen has the same colour. The leaves have some resemblance with the *Corchoris*; they are light-green and veined. The taste is sharp and stringent; the effect is diuretic.

8.—I obtained some new plants. among them a *Psychotria*, with party sweet, partly ill-smelling blossoms, of which I made a short description. The difference of the Kaldeer which Mr. Rheede in the Hortus Malabaricus p. 2, tab 1-2, calls kadi, drew drew my attention to this kind of palm. Mr. Linné has in his Flora Zeylonica placed them with the Bromeliæ on account of the the different anthers, but they are very different from them. The ordinary kinds, which are very common here, and are those which Mr. Rheede has drawn, belong, according to my observation, to the *Dis* plants, and only form a variety.[d]

I found quite a different species in Junk Ceylon, when I wandered over the mountain. It climbed on the highest trees;

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[d] He is here speaking of Pandans.

the stem was not much thicker than a thumb and had also raised parts in ring-shape like the common kinds. The leaves grew in bundles growing far from the next; they are attached to the stem and grow upwards. I only found fruits which were almost ball-shaped; the female blossom was prickly. To-day I got some fruits of another kind; they grew on a stalk, which was one foot long and as thick as a finger, it curved, was smooth, and woody; near the end there are four or five round, pointed, long, and woody styles, close together. The fruits are prickly, blood-red, and of the size of a full-grown apple. The fruits are sessiles, alternate and do not grow close together. The stigma grows at the side of the styles and is a long slit. I could not obtain the male blossoms yet. But as I had some male blossoms of the first species, one of them nearly always being in bloom, but generally only one at a time, I described that. There are indeed many varieties; the bracts of the one smell deliciously, and the Portuguese and Chinese put the blossom among their clothes; while the anthers have a somewhat sickening smell and produce a great amount of white dust.

A second kind does not smell at all, therefore the Malays call this kind by a different name. I do not know the fruit of the unscented one; the leaves are only slightly different in the two kinds.

There is another kind here, treasured by the Chinese on account of the lovely smell of its leaves. This is specially strong when one cuts the leaves into strips and dries them; the scent then surpasses that of the bracts of the first-mentioned kind. The stem is exactly like that of the other, but the leaves, though sword-shaped, are almost quite flat; it has no prickles, either on the edges nor at the back, but everything is smooth and much more delicate. The point of the leaves is quite short. There is a general idea prevailing that it never has blossoms in the gardens, but that it has both blossoms and fruits in the jungles, but it has no smell there; this gives rise to the belief that there must be a different species still. I have already mentioned before that I have seen such a little tree in Kar Nicquebar, and that it had no prickles. The Malays call it Pandang.

12.—The frequent rain, which falls now almost daily, hindered me from making any botanical excursion. I got however some Epidendra of a tree, the front part of which was projecting and looked like the point of a shoe; upon it grew an anther which bent back and yet preserved the obtuse part of the nectary; they were rather large and yet as long as they were fresh I could not perceive any pollen. I sent my people in vain searches for the male blossom of the species of Kaldeer which I had seen lately; I saw them often enough from a distance in deep swamps. Their crown forms a bundle as thick as the arm; the leaves stand erect, are long and sword-shaped, with very long points; their colour deteriorates into blue-green. I got many blossoms of the *Amomun Scyphifeum* instead, very good specimens, and a kind of Languash, which grows in the water. It has black pears, which contain five three-cornered grains, being three times as large as the common Cardamons. My people also brought me some kinds of moss, among them the *Hypnum Bryoides*, the *Iungermanina platyphylla.* Also some leaves they brought, but as they had not taken any fruits with them as well, I could not decide to what plants they belonged.

13.—The illness prevailing here began to kill many of the Coromandalians living here, who are partly Mahometans, partly heathens. The most general illness is dysentery, which begins with pain in the knees, fever, and sometimes loss of blood. The common native physicians are so unconscientious, that they give the people powdered Mangostang bark, or they take peels of unripe pomegranates, roast these with some other ingredients which they make a secret of (in some cases I know that they added alum), and this mixture was given to the invalids. Some healthy stong natures are cured by it, as I had the opportunity of seeing in the case of two boys in the same house with me. They were cured after three or four days. But with weak natures it generally has sad consequences, the least of them being that they have to suffer from a general hardening of the digestive organs for several months. But I have seen other cases that the invalids died suddenly from inflammation of their bowels.

There is another illness, frequently occurring among the European soldiers here; it begins with rheumatic pains in all extremities, which pains sometimes spread all over the body. But the surgeon, who by the way is a very clever man, told me that this illness could be cured by using remedies favouring perspiration, as relaxing salts, and that there were never any fatal consequences attached to this illness.

The rain which fell during the night was so strong that it seemed as if we were to have had a general flood. After 8 o'clock this morning the weather was fine, but cool; we scarcely had sixteen degrees Rèaumur.

15.—I went into the jungle after botanical researches. The swamps were full of water on account of the heavy rainfall yesterday, and although I saw many beautiful blossoms from a distance, I could not reach them. I therefore remained in the mountainous region, and was amply rewarded, as I found many kinds of trees and shrubs and obtained some of their blossoms. Among them was a new *Phyllanthus*. It is an erect *aufstiegend* plant, with two stamens and resembling the *Chionanthus*. I found an *Eythroxylon* which I had frequently seen in Ceylon, a *Hamelia*, and a *Morinda* with four stamens, which resembled the Ragac, as it is partly erect and partly creeping. Moreover I found a new kind of plant with beautiful light green leaves and white blossoms; it grew in the wood and belonged to the Polygamia. There were many other plants besides which enriched my Flora Malaccensis.

16.—After I had classified the plants I found yesterday, I accompanied my Malay servant in the afternoon, who went out shooting and shot for me some flying lizards with a blow pipe a few days ago. At the same time I wanted to see the way in which agriculture was handled in these parts. About a quarter of a mile from the town I saw the first lizards with spread wings high up in a coco tree in a Malay garden. They were of the same colour as the stem of the coco tree. At the first shot, which hit the branches near them, they began to nod their heads, and then they put out a keel of bone—this grows on a skin which is flexible; at both sides of the head there is a shorter thinner rib, (Ribbe in M.S.) to which this skin is fastened. The animals continued to put this bone out repeatedly; it is lemon-coloured. After a short while they puffed themselves up and at last they flew to the next tree, which was about ten feet distant. The wings consist of a thin skin, which is black-grey, and has round red spots on the upper side; underneath it is blue and has some long black spots. This skin is intersected by six ribs, which almost reach to the edge, and both wings put together almost form the shape of a heart. As they nodded their heads they uttered a faint squeak, almost like that of the house lizard. They live on ants, which frequently creep up the coco-trees after the honey of their blossoms. Most of these ants were of the kind which have a heart-shaped head, which is at the same time flat round and shiny. The back has two pairs of prickles which stand erect, the front pair being the highest. There is yet a third pair of prickles growing in the middle of the body, which are the smallest. The whole body is black as far as the root of their back body, the feet are brown. The animal is of medium size, but may be reckoned among the ants.

The lizards changed their colour like chameleons and some other kinds of lizards. As I was dressed in black, they turned black in my hand, and blue in the hand of my servant, whose clothes were blue, some, which had been wrapped in a red pocket handkerchief, turned red. The colour, as far as one could see, came on gradually, but I want to see whether, with the help of the microscope, I can make any further discoveries.

17.—After divine service I went to some gardens and looked at the Areca tree idolised here. It had only some very young fruits and some which were quite ripe. The former had no real style, but the stigma was divided into three three-cornered parts, which were egg-shaped, woody, black-brown and easily recognised. The ripe fruit is a little larger than the common nut and those who eat it will find a particularly agreeable taste in it. I split one, and could not find any remarkable difference from other Areca nuts, only it seemed to be speckled with a faint red.

There were no male blossoms at present, but the two large spadices were almost on the point of bursting. In shape and size they resembled the common Areca spadices. The stems are also alike only the leaves are quite pointed. I was told that many of these Areca trees grow in the island Pullu Dinding.

In the evening I prepared for journey up stream. Mr. Clas de Vent had invited me to go by boat to one of his country houses lying some miles inland.

18.—Before four o'clock this morning I was ready for my journey, and we started shortly after. The weather was not favourable on account of the continual rain. The stream moreover made so many bends, and rendered our progress very slow; first the stream was very broad, but then it grew narrow on account of the waterplants growing in it; at times it was so narrow that we could not use our oars on either side. The plants which had the longest roots underneath the water were the kaldeer with the brilliant red, prickly fruits, the points of which fall off like an aperculum. Their roots went down as deep as two fathoms, and to them stuck some kinds of grass, as *Oryza avium*, *Tizania*, etc. We passed the place where the beautiful white clay is found; the water was very high, and so the shore formed by the clay was only half a foot high. The Chinese export this clay to Java and China, and pay the proprietor, who is a Malay, a certain amount for each pikul.

In Batavia this clay is said to be used for forming face masks, but I could not learn in what way they use it in China.

After we had passed many narrow places, we had at last a wider stretch of water though it was overgrown with a high kind of grass which was a *Scirpus*. The *Involucre* was two leaved spreading with a three-angled point and the flowers crowded in panciles, and further in the stream everything was covered with *Melalenca Leucadendron* which is here used as agricultural wood, the transplanting of which is managed in the following manner.

In the dry months, which according to the opinion prevailing here are from January to the end of March (though it rains at least once a week), they hew down the full-grown trees and cut off the branches bearing the seed; they let these dry, together with other shrubs and grasses, and then set fire to them and let them all burn down; it is said, that this burning makes the Melalenca grow more luxuriantly. One could distinctly see the trace of fire on some half-grown trees by the black bark. It is certain that the seeds, roots, trees, etc., can stand fire in India. I have had a proof thereof in the Palliattie mountains, where a special kind of *Euphorbia*, with a bulby root, a beautiful *Ba'eria*, the trees of the *Myrobalanus Citrinus* and the *Santalum rubrum*, had been exposed to the same treatment, as the bark showed still traces of burned coal.

At last, at ten o'clock, we arrived and I went immediatly into the jungle, where I found many new kinds and species, which it will take me some time to classify.

Specially I found a kind of palm with simple feathered-leaves; it had no stem, and the stalks of the leaves were very prickly. To my annoyance, I could not detect any male blossoms. The young fruits grew in a spreading panicle, which much resembled the Elate, but the calices, which stood at the first partition, were peculiar; they were obverse ovate, about a hand in width and almost one span long. I also found another kind of palm, equally stemless with no leaves, fitting one into the other at the root; between them grows the fruit-bearing stalk, about two feet high, which has a few leaves sheathed one into the other. It has an erect panicle, closely pressed together and obtuse at the end, which was not as thick as a man. Upon it grew the male and hermaphoditic blossoms in great quantity. The fruit has the shape of a European pear; the peel is scaly, very hard, and woodlike on the inside. The kernel is a short cone, broad at the base, and pointed at the end; it has deep furrows, and consists of a blueish white horny substance.*

I also discovered a monandrian by the smell, because if one touches these plants in passing they fill the air with an odour of clover. The leaves are oblong like those of most of the *Scitamna*, but their surface is more shiny than that of any others. All along the edges the leaves are lined with fine gold shiny fibre, which fact distinguishes them from others. The blossoms have a spike like a kind of cone, which grows at the side of the root; it is hardly as long as the width of a hand and as thick as a finger, being thinner at both ends. However the resemblance which this plant has with the *Amomo Scyplieferm*, which I have mentioned and described, is great. The blossoms are only little raised above the ground, and almost the whole spike grows underneath the soil. The blossom of this specimen was dark red; that of the former is very light red. This one has a very wide open labiate corolla, and therefore deserves the name of *Leonurus.*

As the blossoms are fleshy, they decay after the two or three days of their bloom, and therefore the ear or cone is dirty and sticky when one picks it up. After I had wandered about in the deepest forest and come across the fresh track of an elephant, I hurried back to my host, who offered me excellent refreshments, and about 5 o'clock we started on our journey back, and arrived at 8 o'clock in the evening.

22.—All these days I was busy classifying my lately-found plants, among which I found much interesting matter for description. As the weather was so beautiful, it tempted me to undertake another botanical excursion in the afternoon. I intended to examine three kinds of *Utriculerias* thoroughly, and I brought home six different kinds, in order to compare them the better. They grew nearly all in the swamp at a little distance from each other.

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* Probably Bertam. *Enqussona tristis.*

23.—My *Utricularia*, which I brought home yesterday evening, were all in bloom this morning, because I had put them into water. I found that the large *Utricularia* was a variety of Rivins, which Mr. Arch Linné mentions in his Spec. Plant. The lower petal of these Malay specimens is much wider than any I have ever seen before, and is of a bright yellow colour. The other three, of which I spoke already yesterday, were new species. Unless the description of Osbeck is incorrect, the yellow blossom was bifid. The other two kinds were the *Urticularia Coerulea* and the *Utr. Minor*.[a]

I also described a shrub, which I called Magnolia, to which plant it bears much resemblance. I found it often here in bloom, but could not obtain any fruits.

24.—In the afternoon, after divine service, I went out with an English man, a Mr. Hay, who is here on account of his health. We went out to see the tombs of the Chinese, specially that of the present chief of the Chinese living here. The tomb is being built on a mountain in front of the fortress on the southern side. The different partitions of the tomb were only as yet indicated by ditches; when finished it will occupy a large space.

My botanical treasure I found was an Indigo, which grew on that mountain and spread several feet wide. It resembled the *Enneaphylla*, although there are many differences to be found. The greatest difference can be recognised in their pods which in the one case are short, round, thick, and not pointed, while in the other they are four-cornered, furrowed, pointed, bending back. The one plant only grows one foot long, and is covered with leaves; the other has a round, red and smooth stalk, and is more than two feet long, and the leaves stand apart from each other, etc. Vid. Defin. pag. 71.

I also stuffed a beautiful bird to-day; it lives on our coast also, but its colours are not so vivid there. It is of the size of a young guinea fowl and belongs to the kind that have naked knees.

[a] No doubt *H. exoleta*

A more accurate description can be found in my Enchiridion, pag. 27.

25.—I was presented with a Juno bird[b] by Mr. Clas de Vent, who bought it for one piaster from a Malay. It was a male bird of the size of a peacock. The bill is black, conical and the upper part only projects slightly. The head is oblong, covered with thin black feathers; on the forehead these feathers grew thicker and were a little longer; they ended in a stripe down the neck. The skin showing through the feathers was blue. The back and lower part of the neck were covered with feathers of a rust-brown colour, having black spots. The wings had twenty-two large feathers, eleven at each joint, the longest growing on the second joint; on the wider side of the feathers there were some kidney-shaped eyes. These eyes were near the traversing quill on a grey and black spotted ground. The shades of these eyes were: first a narrow white stripe, then a black one, which changed at the side nearest the quill first into dark-brown, then into a greenish tint, which shaded into yellow and it ended with a blue white shade; at the other edge the brown began again, followed again by black. These eyes took up the third part of the wider side of the feather. From the outer edge of the feather to the eyes there were some black and brown stripes of different width; further from the eye these stripes were intersected and the black ones changed into a series of big round spots, one close to the other, finishing at the edge of the feather. The other part of the feather has first at the side of the quill a narrow black line, and then a white one; after this follow round black spots with fine circles round them; later on there are only these spots on a white ground. The spots nearest the edge are oval and small. The rays of the feathers increase in size towards the end; they are obtuse and have white star-like dots on a black ground. The quill itself is first of all black, and has then at both sides white lines enclosing the black; shortly after the outer half is white the other remains black; the black disappears entirely towards the middle but the end is black again.

The whole length of the feather is more than two feet; the end is half a foot wide and at the beginning it is about two inches wide.

The front feathers have a beautiful blue quill, turning into

[b] Argus pheasant.

white towards the end; the rays are rust-brown and have first white dots, which change afterwards to black oval spots. The after-wing or thumb is at the edge of the upper joint and has five short feathers.

The tail-feathers were twenty-four in number, two of them being twice as long as the whole bird; their colour is black, strewn over with fine white specks.

The breast is rust-coloured, the stomach lighter. The feet are like those of the chickens and have a beautiful red, shiny colour, the eyes have a yellow ring, otherwise they are black. The nostrils are oval.

Everything points out that this bird is a kind of pheasant; it lives in the woods and eats all kinds of fruit, at the same time digging for worms in the manner of chickens. The cock puffs himself up like the Calcutta cock. They are caught with bait in cages.

I intend giving a more minute description of this bird, when both the cock and the hen, which are kept in Mr. de Vent's garden, have grown a little tamer.

27.—I described some plants, which I collected yesterday. In the afternoon I went to visit the hospital, built here for the lepers, especially for those attacked by the disease called here, Mal de Lazar. The hospital lies half a German mile northwards from the town on the shore, in a place highly fit for it, as from there one has a beautiful view over the whole of Malacca.

Behind this hospital is a small wood with some swamps which stretch out at the eastern side not very far from the hospital.

This hospital has been founded by the Compagnie, and is kept up by alms money; the second councillor has the supervision. At first they intended to build the hospital on a much larger scale, for there is still a gate to be seen with two wings, and solid sloping walls close to the sea, which bears the date of 1697. But after this gate had cost so much, they did not continue to use bricks for the whole building. It is now enclosed by a fence of thin poles, which measures about 150 steps square. There is a so-called doctor there; he is a Portuguese born out here, he is old and pretty ignorant. His house stands in the first enclosure. It is at about forty steps distant from the hospital and by as much from the outer fence. The building for the invalids is a Malay

Palliote ; the inmates live about half a man's height above the ground; it is small, and only has light from the north east, at which side the building is open. The side looking towards the sea is closed. Beside this building they have still a sort of shed, which stands on poles; in it they prepare their food. The inmates at this moment are only twelve in number, all of them being native Portuguese, Malays, and Chinese, of both sexes. Among them was a boy of 16 years, who was quite merry.

I tried to find out what remedies were used, but the doctor could not tell me more about them than that they went to town from time to time to fetch different things with which they bathed the ulcerated parts. The intention of curing these miserable beings was not combined with this hospital.

I felt the pulse of some of them, and could find nothing remarkable; in the worst cases it was slow and weak. The skin in the healthy places was soft and moist. I inquired into their taste, tongue, sleep, and pains, all was as in a healthy state, only when a part was falling off they felt pain, but they had no pain in their extremities, which are really the seat of the illness. Their lungs were prefectly free and I could detect no vestige of hoarseness as in the case of the Kakerlacks and the Iceland lepers.

This kind of illness consists of a sort of shrinking of their fingers and toes. The fingers and hands begin to dry out, they are quite stiff and insensible, so that they can even touch fire without feeling any pain. After this state appears a small inflamation and a malignant matter detaches the joints by degrees. At the feet there is generally an odoematous swelling to be observed; the nails produce a malignant moisture and the limbs fall off with much matter.

Here, like elsewhere, the belief is general that the illness is contagious, but none of the present inmates had caught it in that manner. The doctor had indeed lost his teeth and only a few still remained and stood out like those of a squirrel, but he assured me that there was not a sign of leprosy in his whole body, though he had spent the greatest part of his life in this hospital.

It is more likely that this disease is produced by taking indigestible and unnatural food, as many kinds of tortoise shells, land-snails, amphibians (lizards), rays, sharks, and several kinds of molluscs, such as Hollothurians, Medusae, etc., which custom prevails with the Chinese, who suffer most from this disease.

I could distinctly see that these people either did not know anything about diet, or did not want to keep to it, because one of them had bought a *Monoculus polymorphus* for his supper, and they told me themselves that whoever did not know how to prepare it risked having much headache, giddiness, and depression, from eating the intestines. From a European surgeon, who had formerly had the charge of these invalids, I heard of the only remedy. He had put some spirits of wine and a few drops of oil on the wounds of one of the invalids, whose hands were in a high degree leprous; the malignant festering ceased directly and the wound soon after healed. I asked him why he used this remedy; and he said that he knew no better one and had just wanted to try. He added that the illness had never recurred in that hand.

There was no mortality attached to this illness; the invalids could grow pretty old.

I looked about in their little garden, which had not much interest for me, especially in the present season. There are some trees growing in it, among them a very big tree of the *Cassia Fistula*; it sheltered the building entirely from the north-west winds, which are said to be very strong here at times; there were some other smaller trees of the same species. Also some *Pterocarpus Draco* trees, some Coco trees and Papayas, etc. Among the plants they had some wild Lanquos with a kind of leaf very large, heart-shaped, pointed, intersected by many nerves, shiny, and of a bright green colour; the tree had neither blossoms nor fruits. According to the oblong bulb-like root it seemed to be a Dracontian or a Calla. Moreover, I found here a stinging *Acolypha*, the leaves of which were like those of the common European nettle, but the fruit was different. The male blossoms grew at the end of the ears; their corolla consisted of four petals, which were very small. The Involucre was kidney-shaped, and serrated at the edges. The capsule was three-cornered and contained three round seeds. There were three wells in the enclosure, but they only had common kinds of moss on their walls.

29.—I received a splendid big *Gorgonia*; some swallows' nests had been built upon it. Fucus grew on the rocks like the *Coctis* in an angular sort of fashion. Underneath the water its colour is dark green, but in the air it is yellow and looks as if enamelled. I often saw this kind of Fucus in the Straits of Ceylon at no great depth and only one foot high; but here it had been fished up from a depth of thirty fathoms by means of a fishing line. There were all broken on account of the rough handling they had undergone.

30.—I went out to botanize and obtained a quantity of new plants, which I must describe during the next few days. There was specially a great number of the family of the *Phyllanthi* and if one wanted to classify them properly, one would have to distinguish several families. They are in this country what the numerous Salices are in the colder parts of Europe.

Nov. 1.—I examined the family of the *Phyllanthi* more minutely and found the specimens, which in the main points were like most of the *Phyllanthi*. Their styles however were erect and cylindrically grown together, they were club-shaped and at the end divided into three parts, each of which was subdivided in its turn. I also found a simple shrub, only one and half feet high; it had large egg-shaped leaves and large hanging bell-shaped blossoms, and their fruit was a long four-sided pod; this shrub evidently is one of the *Gynandria*, and in remembrance of my friend, Professor Brannicke, I called the plant after him.

4.—I went to Pringi, and found there some blossoms of the Rambutang; those I found were all six stamened and if the rainy season had not done too much damage, I could have classified them also on this occasion. There were also many fruits on the tree in various stages of ripeness. The Dutch call them Serjiants or Hunde Kloten, because two fruits always grow out of one blossom.

7.—I went out specially to see the tree from which the Lign aloes is gathered. They showed me four pretty big trees, but I searched in vain for some blossoms. These trees grew really in a Malay garden hedge. I left the detailed description until such time as I could perhaps obtain some blossoms.

10.—I found a special kind of fig tree, which distinctly showed the parts of fructification. The male ones consisted only of a single tube and a stamen, which projected a little with the anther. Many of them covered the whole surface of the fruit, which was bigger than a cherry and of a dark purple colour. The female ones are green on the outside, but the fleshy part of the inside is also of a beautiful purple. Their stigma is also single. The detailed description is in the definitions.

12.—The rainy weather continued more steadily than ever before, and the lower part of the country was inundated. I waded to a place where grew a big fig tree, which had ripe fruits on one side of the crown. It was much frequented by monkeys and by many kinds of birds, as the black Martins with the yellow ear-lobes, many kinds of pigeons, and specially the long beaked Buceros. I could not get near enough with my rifle, because the monkeys soon became alarmed and frightened all the birds away by their yells.

16.—I botanized a little; nearly everything was under water. The principal thing I found was a *Dillenia* with yellow blossoms, which Rumph has down in his Herb. Amboin.

A tiger had come down from the mountains and had caused much damage.

22.—Up to now we had most terrible rains, everything was saturated and my collection suffered greatly as everything began to decay. Captain Banton arrived in the harbour to-day with the war frigate "Sea Horse," coming from China.

24.—To-day I sent away whatever was dry in my collection by the war frigate "Sea Horse," which starts for Madras to-day. I trusted my plants to the special care of Mr. Stuart, doctor of the frigate.

25.—We had an eclipse of the moon last night, and all the Chinese were about with light and fire in order to help the moon.

26.—I had the pleasure of Captain Light's arrival, who came from Kedar, and will only stay here for a short time.

29.—I went on board of our ship to look at all my things, which had suffered very much from the moisture, not only my collections, but also my books. It took me some days to repair the damage, because the uncertain weather continued.

Dec. 2.—I went out to botanize and found the *Asplenium*, the peculiar kind of pepper with the fat, lancet-shaped, oblong leaves; the blossoms were monoicous.

There was a large climbing kind of fig with beautiful looking fruits. As their parts of fructification were big, I had no difficulty in describing them.

3.—During the last days we have had some north wind and the weather was better. I still collected many plants, specially fruits, which I had not yet got. In the middle of the day I dried my plants in the sun and obtained some beautiful specimens.

4.—I obtained many kinds of corals and a new species of *Holothuria* and a special kind of mollusc. I also went to Pungul to-day, where I made as many inquiries as I could concerning the Gambier and made a description. It seems to be a peculiar fact that the seed cannot be kept for very long. The place where the boiling was to be carried on was just being built. There were three large holes, surrounded by a wall, they were three feet in diameter and two feet deep. These holes were made to contain the boilers and they were dug into the mountain quite straight; there were some other holes to contain the fire-wood. The edge of the boilers was surrounded by a certain bark, forming a circlet about $\frac{5}{4}$ of a foot high. There were also some gutters manufactured of wood which was $1\frac{1}{2}$ inch thick; the gutter itself was three feet wide and four feet long. These gutters lay in perfect order on a slanting stand and were destined to bring the lie into the boiler.

The merchant and architect living here will give a perfect description of this boiling establishment to the Ravi society, but I content myself with the above-mentioned facts, on account of my short stay here, and because of the false information which people are so apt to give about such matters from suspicion or jealousy. The ways of boiling are different, but the Chinese is said to be the best. The whole place is fourteen paces long and eight paces wide; the roof is covered with the bark of the *Melalenca* tree, and I was astonished to see that the house was situated in such dense jungle, and that people were allowed to stay here, on account of the tigers. Only at one end of the house they had a small partition which could be closed; it was scarcely the height of a man and this was their sleeping place. It was peculiar that from underneath the fire hole of one of the boilers there came out a beautiful clear spring. This may however only have been originated by the rainy season, which had begun uncommonly early this year, and still continued.

I went a little deeper into the dense jungle, which was now transformed into a swamp, and saw some small trees of the Gambier, which had been planted on a hill. Some of these trees, the oldest were about a span thick above the root, but soon after divided into branches, which grew slantingly upwards, and towards the end they bent down again.

They require a stony grassy soil with mountain mould, like that of the hill were they grew in this instance. The stones were nothing else but porous tufa in small pieces, at least I thought them to be, so as far as I could judge from their appearance. The mountain mould and the stones were much intermixed with a fine sort of yellow mica.

Wild Cardamoms grew among the shrubs, also the *Nutans alpinea* with the bending stalk, but I could not find one single blossom. Deeper in the jungle I found many *Amomum Scyphiferum* and *Amomum Leonurum.* The latter has a beautiful smell and the edges of the leaves are of a beautiful gold yellow, but the leaves of the *Scyphiforum* are slightly wavy. There was another Monandrist which had leaves half as long again as a man. The Malays whom I had taken with me, said that the blossoms grow at the end of their stem or leaves; the plant was unknown to me. The Chinese bamboo grew wild, but it had neither leaves nor blossoms. I saw many kinds of wild Mangas; they were just beginning to have new leaves and were developing the buds of the blossoms. There were also many climbing plants; they held firmly on to the trees; and seemed to be several kinds of Pothos and of the beautiful fig. A shower of rain put a stop to my zeal in botanizing. Afterwards I made a little excursion to the sea-shore, which however one could not reach, on account of the deep mud. On a fig tree, which had beautiful orange-coloured fruit, not larger than a small cherry, I saw a Buceros; my presence did not seem desirable to him and he flew away into the wood. There was a small kind of the so-called kaldeer, it had fruits, but I was not so lucky as to get a male blossom. The whole tree was not as high as a man, and the stem hardly as thick as a hand. I tried to find some peculiarities in the leaves, but could see none, and so I had to stick to the fruits, which are almost as round as a ball. Many of these fruits grow on a common stalk; at one end they have a horny style, with bent ends, which when the fruit is ripe drops off like a *Calypton.* These Racemes were yet young and had therefore not the beautiful red colour which they usually have.

There was a second kind growing here as well; it stands erect and the stem is high, naked, jointed and red. The leaves form an erect *Fascicle.* They always grow in damp parts, at times even in deep water; their fruits are single like those of the common kaldeer, but they are completely parallel. Standing closely together at the banks of the rivers, they make a nice show with their slender red stems. Their leaves are more blue-green than those of the others. The creeping kaldeer also grows here frequently in the wood, but I have not found any of its fruit, except in Junk Ceylon.

6.—In the last days I arranged my things, and dried and packed as many of them as I could in this weather. I found some *Nepenthes* in blossom, but they were only male ones. They have separate male and female blossoms, and are polygamists.

7.—I saw a corpse in the house of a Chinese. It was that of an old rich woman who two days before her death had distributed 500 piasters and 300 rupees to be expended at her funeral. She had died from old age, and had foretold the exact hour of her death. The body was already in the coffin, and this stood in a front room between two rows of curtains, which had been hung across the room. They were looped up in the middle. The coffin stood on a special bench, the feet of which were like those of a carpenter's bench. The coffin was peculiar. It had a kind of foot about a hand high which slanted inward, then it bulged out at the sides and was half-round, but the lid projected again in slanting manner over the edge and was as thick as the foot of the coffin; the same plan was followed at both ends. The end for the head was somewhat thicker and was convex at the top, being slightly raised at both ends. The whole coffin was three feet high and covered with a thin shiny varnish on the outside. At both sides stood two candle sticks with wax candles, which burned continually. In the middle of each side stood two idols, Josses of 1½ foot high, they were placed on a three-cornered pedestal, which also had three feet. The coffin was said to have been covered with many layers of paper inside, so as to let no manner of smell of decomposition pass. The body itself was clothed in eleven different kind of garments, so that this old woman might have an ample supply of clothes if she should soil some of them on her long journey. In front, outside the curtains stood a square painted table and upon it stood an idol on each side; they were dressed in the same way, only their dress was white with artificial flowers; they held in their hands white staves, longer than the whole Joss, and at the end of these staves were fastened streamers. Everything had been removed from the room except a few chairs standing at the sides. In front of the door there was a strip of yellow paper three feet long and scarcely one foot wide; on it were painted black Chinese letters. Up in the room there hung first some green squares of paper and underneath these were narrow streamers of many different colours; they were one foot long and two inches wide. There were many streamers of black, green, and pink paper. From the roof of the house hung down longer streamers of red colour without any letters, and also two big lanterns about 1½ or 1¾ of a yard in diameter; they were round and made of fine rotan covered with varnished paper bearing large Chinese letters.

8.—The dead woman was buried with many ceremonies. First of all a table with many viands was spread, among them were a capon, very fat pork and different kind of comfits. There were small and big flags, and all sorts of big lanterns. Two idols, one clothed in green, the other in red silk, were being carried about, on a three-cornered pedestal, also one idol sitting in a litter. They were nearly all of one size. The coffin stood on a bier, which was covered with blue linen. The nearest relatives walked before it; they were clothed in a sort of thin straw-coloured linen. Behind the coffin followed the women, who were most nearly related to the dead; they were surrounded by a screen of white linen fastened upon sticks. Behind them came many other women. The ceremony was interrupted by a heavy rain, and some discorder ensued. The coffin was let down into the earth at the side of a mountain, the grave being about one man's height deep. Underneath the coffin they put some money and layer of dead embers mixed with chalk, and from the mountain mould and Q, a kind of mould Q was prepared, which was laid over the coffin, before the other earth was put upon it.

I botanized here a little and found often the *Frisea Nummulària* and the *Mirifica* in blossom. The latter also had fruits. A kind of Epidendris amongst the shrubs had finished blooming, I therefore could not examine the blossoms. The root consisted of long furrowed woody bulbs; the leaves were oblong, lancet-shaped and spreading, growing half down the stalk. It had had blossoms, but I could now only find some oblong petals pointed at both ends. The *Viscus opuntia* grew here frequently on the *Memicylon capitellatum* and among them climbed Cassytha.

10— During the last days I was busy drying and packing my things, which was very difficult on account of the frequent rain; the corals, which I wanted to dry, gave me much trouble.

11— I went out again to find the blossoms of the *Nepenthes*, because for a long I have had doubts whether they are hermaphrodite. I often came across their male blossom, but the female ones were too ripe. On the Chinese graves I found a special kind of *Pteris* and *gilongifolia*, *Burm. Fl. Seyl.*, *Tab.* and *Pteris triphylla.* There ought to be careful researches made in order to find out whether they are not hybrids among themselves.

The *Echites Candata* began to bloom; it is of a peculiar construction. The long ends of the blossoms, which are of the size of the *Nigellastrum* hang down as much as three inches and are dark blood-red in colour. It is a kind of shrub which grows on other trees and spreads very much. The pericarps are the biggest of any kind of contorta which I have hitherto seen.*

12— I sent all my things on board, and tried to overcome my disappointment about the failure of the journey. and my anxiety about the many troubles which I might yet have to overcome on account of the war. I went on a botanical excursion to a plain situated between the western suburb of Malacca and the leper hospital. I frequently found *Schoenus Cruciatus*, *Agrestis Matrella*, *Stemodia* and three species of *Utricularias* which are very common here, viz: the *nivea*, the *aurea*, and the small pruple-coloured one. Among them I found a beautiful Didynamist of the second order of this class, and of the third sub-division. The blossoms are bell-shaped and are cut into four equal round lobes at the end, before these lobes divide they grow crossways and are pressed together, the outside is yellow; inside, underneath the lobes it is bearded with curly white fibre, and the colour is here of an even more vivid hue than on the outside, and there are some fine orange-coloured stripes. The stamen are shorter than the corolla and stands close to the stylum; the anthers are white, compressed and heart-shaped.

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* *Strophanthus.*

END OF PART 2.

VOLUME XV.

DECEMBER 15—30, 1779.

QUEDAR.

Dec. 15.—I went on board in the afternoon.

16.—The pilot and all my travelling companions came on board. In the afternoon at 4 o'clock the anchor was weighed and we sailed past Tanjong Cling.

17.—We came as for as Cape Rachado; had some wind and rain and saw Sumatra. Strong thunderstorms and rain during the night.

18.—Saturday. We came to the Porceller mountain, and towards evening we cast anchor at the month of the Strait of Callang. The weather was fine; there was very little rain.

19.—We passed the afore-mentioned Strait almost entirely, but near the last bay the current turned against us. The weather was fine, some rain, but very little wind.

20.—Quite early the anchor was weighed; we passed the two rocky islands Niodd and Joss which lie close together; this was still in the morning; also the three islands called the Bontsilies, and cast anchor at Sallingor towards five o'clock in the afternoon.

21.—I went on shore but obtained very little. The heat was very great; *Hedysorum Strobiliferum* had blossoms; there were a kind of *Polypodium* with simply pinnate leaves and scandent stem, *Bryonia* with hastate leaves. The mountain ranges of this country were very high and enclosed in mist. At four o'clock we went on board again and sailed on.

22.—Towards evening we saw the Dindies, and not far them the Sambilangs.

23.—We passed the nine Sambilang islands and the Dindies. Pullu Perah we saw in the distance; it is very high and enclosed in mist. It is a remarkable fact that the Sambilang islands lie all in one direction with the small island Pullu Issarah, which is at six miles distance, and another island which is near Sumatra and is called Varella; this direction is East N. E. towards W. South W. We had much lightning in the evening.

There is much dragon's blood collected on the Dindies, and according to what Captain Schilling told me the cane cut here is the very best. We saw a Malay Proh close to the shore. The islands are not inhabited, for fear of slave dealers.

24.—On account of the calm, we still were near the Dindies and Pullu Issarah; in the distance we could see the high mountains of Pullu Pinang, rising out of the sea. At nine o'clock the wind began to be very favourable and we soon lost sight of the Dindies; we passed Perah, which is always wrapped in a blue mist. In the evening as the moon rose there arose also a strong north east wind, which lashed the sea. The high waves hindered us very much in our progress during the night. The weather was fine after we had a rain-shower, which cooled the atmosphere considerably.

After the moon had risen there was a rainbow-like circle round it at two degrees distance; there was a spot of the same rainbow hue at the side.

25.—Early this morning we were near Pinang island, which has a smaller island at its side. The high mountains have many cliffs; at the north-western extremity they are dome-shaped. The length of the islands is about three leagues; they are said to be uninhabited on account of the kidnapping which the Malays exercise upon one another. Judging from the blue mist, the mountains must contain various metals. The name has been given to this island on account of the Areca trees, which are called Pinangs in the Malay language. In Malacca I had been told that here, as well as in the Dindies, many *Areca Clitoria* grow wild.

At eight o'clock we had the high mountain straight before us; it has the shape of a cone; we had seen it quite distinctly from old Quedar, being on land then. These mountains are called Girai by the Malays, and it is here that much tin is dug out and melted.

26.—We had to cruise between the island, Pinang, with the high mountains, and old Quedar, on account of the contrary wind. The weather was fine during the day; in the evening we had calm, followed by some showers, and in the end the contrary wind returned with its full force. The depth of the sea in this bay varied between twenty-two and twenty-six fathoms.

26.—In the course of the morning we saw the long narrow rocky islands in front of Quedar, which are called the Peers, and also at some distauce from Quedar, a mountain which is called the " Elephant," on account of its resemblance to this animal.

27.—We arrived at last in the harbour of Quedar at half past nine in the morning, after we had been cruising for a long time on account of the contrary wind. The weather was fine. In the afternoon I went on shore and to the town, which in the maps is called Queda, bnt this name really belongs to the whole country.

The town is only very small; a fortress has been built at the mouth of the river. A wall, which is almost built in one straight line, shows some intersections for cannons. They had some six pounders; apparently they were either not loaded or loaded very insufficiently.

The stream divides the town; the houses, which are nearly all Palliots, are built on either side of the river; they are scarcely fifty in number, those of the Chinese being the best among them. The shore is very low, and in the rainy season the whole country is flooded at high tide.

I took my quarters in the compound belonging to the pilot of our ship.

The country is very low everywhere and consists of a very muddy soil, intersected by yet muddier canals. In the higher parts grow *Agolloss*, *Xyloaloes*, *Volkameria*, *Rhizophora*, and some other shrubs and trees that like a muddy soil; they are interlaced with *Volkameria Paderia* and a new species of Contortis. There was a raised path on the south side of the river, leading towards the south, and from it. I could see that the soil underneath the mud consists only of cardia. My curiosity was too great to be satisfied in seeing only those parts which were fenced in on account of the wild beasts, and so I went on. The path was lined with dense shrubbery on both sides, chiefly consisting of *Phyllanth. Siam.* (Cusio) *Verbesina biflora*, *Baccharis indica*, *etc.*

A few steps further on I saw some Christian graves near the path. I could see from the thrown up earth, that the soil consisted only of cardia and was little intermixed with clay.

28—Early this morning I went to the bazaar, just outside the gate, which consisted of low straw huts with open walls, built at half a man's height on bamboo poles. They sold only fruit, as some kinds of *Musa Chauneris*, *Radices ari exulenti* and others of the same common kinds.

By chance I found to-day many Pholades with animals, which are said to be fetched from the sea near Parlys when the tide is low and the water only three feet deep. The neck of this animal is like that of an ascidian, but the rest of the body resembles a zethis.

These animals were boiled like the other Mytyli and are used here in curries and stews. On our table the neck was prepared separately. In the same way *Sepia officinalis* is used here for eating purposes; the smaller ones are generally preferred, and the bladder with the ink is removed and they are well washed. I went along the way I discovered yesterday as far as possible; it really leads to a newly planted rice-field, lying about a good quarter of a mile from the town.

I passed two muddy streams with great difficulty, as there were only two small sticks laid across upright poles which stood about one man's height above the mud and this primitive bridge was sixteen or twenty steps long. The bridge was enclosed by dense shrubs on either side, consisting mostly of *Gmelina* entwined with a new *Phyllanthus Verbesina Pæderia*, *Ceitoria Convolvuli*, *Dioscoreus;* these shrubs were a resort for many animals, because they both sheltered them and provided them with food, among them was the small Capulla. Before I reached the field I had to pass a place which was overgrown with the *Saccherum diandrum* growing to half a man's height; among them were some *Triumfetta Hedysarum Coreopsis*, etc.; they grew close to the path.

The rice was very good, had rather large ears, and was almost ripe; it was of the kind which has the black-brown husks. There was a great number of birds invading this field, they seemed to be of the Loxia kind; their bills were very big and well built to crunch the rice. They flew about in great swarms. There were many small huts built on high poles in this field, which was scarcely one-third of a German mile long. A row of sticks had been planted amongst the rice, and they were connected by a kind of coarse string, which caused them to make a noise when this string was pulled. They were pulled whenever a swarm of birds wanted to settle.

The soil of this field consisted of a little grey clay and many particles of cardia, but nevertheless the rice grew very well and had large ears. The field was surrounded by a high, thick wood. I did not find anything new, only the seed of a tree, the wood of which is considered to be the best for building purposes in Ceylon; I have however not succeeded yet in finding any of its blossoms,

29.—I went with our captain and the passengers of our ship to the capital, which lies about three German miles from this town. We made the journey in a large covered boat. The shore on either side was very low, muddy, and flooded at high tide, and closely overgrown with such trees as like salt-water and a muddy soil, as *Rhizophora Granata*, *Littorea*, etc.

Underneath these trees lay several crocodiles sunning themselves and swallowing some mud from time to time. Their back is almost as grey as the mud; their peculiarity is that they have a flattened body. Their stomach is white. I was not so lucky as to get one of them, as they live in muddy places which are unattainable either by boat or by walking. Nearer the capital, where the water is less salt, there grew on either side of the shore the new kind of palm, Nipa; they stood so close together, that one could not see beyond, but they offered an agreeable and strange aspect. The stream now divided into two arms, which ran parallel for some time and so doubled the agreeable view. I have already mentioned what use is made of the leaves, and I only add that the Chinese preserve the grains of these fruits in sugar; they are transparent in this state, but have no special taste, except that the spice added may give them some flavour.

After ten o'clock we arrived in the town; the shores were a little higher and we saw every now and then a Malay house.

The town lies on the left bank of the river; it is only small, and irregularly built. The king's dwelling is somewhat apart from the town. The real buildings are surrounded by a fence about two men high, and as much as one could see from the outside, it consisted of many small separate houses, built of planks and rafters. Only the building serving for audiences stood outside the fence. It was built on poles which stood at man's height above the ground, and was covered with the leaves of the afore-mentioned palm tree. It was open at the sides, only the floor was lined with two feet high planks. Outside, at one end, two ladders of five steps each had been constructed of narrow planks. Between these ladders was a kind of throne, consisting of square rafters, connected above and below, and crowned with a conical red painted top. These rafters stood a little higher than the raised floor of the audience room; they were thicker than an arm and only planed smooth, without any other ornament. The four foremost rafters stood just so far apart that His Majesty could sit on his feet between them; the two other rafters which were joined to the floor of the room had one step, by which he had to mount on his throne. Round about there was a simple fence of planks, which were hardly two feet high. The size of this throne was scarcely two yards square, the steps leading up to it were not as wide. But this time the king gave his audience in front or at the right hand of his throne.

He is young and rather good looking, his skin is very light. He was sitting on an old Bengal carpet. His dress consisted only of a cotton Cavay (Kabaia?), and a red silk cloth tied round his body after the fashion of his nation.

This red silk belt had a shield in front with raised work; it was as wide as a hand and about one span long.

He had tied an ordinary handkerchief round his head, in so negligent a manner that the crown of his head remained uncovered; they nearly all wear this handkerchief in the same fashion.

His questions and conversation only touched uninteresting matter. When he saw the gold watch of one of our passengers he showed a great wish to possess it, but none to buy it.

His ministers sat behind him in a half circle. Although this nation is very uneducated one could detect some court ceremonies.

I botanized in the rice fields near here. A kind of *Apinia* bloomed frequently near the ditches and grew to half the height of a man.

In the ditches bloomed two kinds of Arusus with oblong leaves; they were peculiar and in my opinion new.

In the evening before sunset we went back. My attention was caught by a peculiar sound like that of a trumpet, which arose from underneath the boat. I made enquiries and was told that it was caused by a small fish and that I could buy this fish in the bazaar near our compound.

The darkness of the night, and the salt water caused the track which our boat left behind to look like fire, and also the fish escaping before us left big stripes of fire in the water.

30.—I went to the bazaar and asked for the fish, which had produced the strange sound underneath our boat yesterday, but there was not one to be had. The people however promised to try and find one for me.

END OF VOLUME XV.

End of Journey.

A BIBLIOGRAPHY OF MALAYA,*

FROM JUNE, 1892. TO JULY, 1893.

BY

C. DAVIES SHERBORN, F.Z.S., R.G.S.

IN compiling this Bibliography, all sources of information have been utilized. Inserting therefore, every publication that has come under his notice, the compiler hopes that the entries will prove of considerable assistance; but, as a large proportion of the literature of his district, either never reaches England at all, or else arrives so long after as to be too late for examination for this purpose, he begs the reader's indulgence for any error that may be present. His thanks are are due to M. Martinus Nijhoff of The Hague for information as to some of the more recent books.

"O. I. A."—De bepalingen betreffende de herziening en bermindering van den aanslag in de bedrijfs belasting. *Ind. Gids,* 1892, pp. 1436-1440.

AALTSZ.—see Quarles.

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* By "Malaya" is here meant that part of the Archipelago enclosed in a line drawn round the north of Siam and the Philippines, through Macassar Strait, between Lombok and Bali, round the outlying islands of Java and Sumatra, and the east of the Nicobar and Andaman Islands.

Abboellah, Kesah Pelajaran.—Bin Abdelkadir Moensji dari Singapoera sampai ka negeri Kalantan. Tersaling soeratannja oleh *Brons Middel.* 8vo. *Leiden*, 1893, 156 pp.

Abdoe'l-Moeloek.—Radja Barbari (Behasa Melajoe) hoeroef Olanda. 8vo. *Betawi*, 1892, 308 pp.

Abendanon, J. H.—De Nederlandsch-Indische rechtspraak van 1881 tot 1891. 8vo. *Batavia*, 1893, 4, 349 pp.

Agerbeek, B. L. and I. P. T. Brondgeest.—Gids voor den algemeenen ontvanger van's lands kas in Nederlandsch-Indië. 8vo. *Batavia*, 1893, 12, 361, 18. pp.

Aldrich, T. H.—A new land sheet [Nannia ohertyi], for Sumatra. *Nautilus*, vol. vi, 1892, p. 90.

Almanak.—Indische cultuur almanak, 1893. 7e Jaargang. 8vo. *Amsterdam*, 1892.

———Soendaneesche Almanak. Eerste jaargang 1892. 8vo. *Cheribon*, 1892.

"Amsterdammer."—Spoorreisje (Een Trans-Borneo). Visioenen en droomen van een Amsterdammer. 8vo. *Amsterdam*, 1893, 74 pp.

Andre, E.—Voyage de M. Chaper à Bornéo. Catalogue des fourmis et description des espèces nouvelles. *Mem. Soc. Zool. France.* vol. v, 1892, pp. 46-55.

Andriessen, W. F.—Der Islam in Niederlandisch-Ostindien. *Deutsche Rundschau Geogr.* vol. xiv, 1892, pp. 459-464.

Anon.—Jaaroverzichten betreffende den handel in Koloniale producten. fo. *Amsterdam*, 1893, 88 pp., 2 tab.

———Verslag van het Mijnwezen in Nederlandsch-Indië over het jaar 1889. *Jaarb. Mijn. Ned. O. I.* vol, xxi (1892), (Tech.-Adm. Ged.), pp. 1-57.

———Verslag van het Mijnwezen in Nederlandsch-Indië over het jaar 1890. *Jaarb. Mijn. Ned. O. I.* vol. xxi, (1892), (Tech.-Adm. Ged.), pp. 58-114.

———De eerste steenlegging van het ziekenhuis to Môdjôwarnô. *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 218-222.

———Leger (Nederlandsch-Indisch). Regeling van de Levordering, het ontslag en het op non-activiteit stellen van de Europeesche officieren; benevens reglementen op het toekennen van pension en onderstand aant die officieren zoomede gagement en gratificatiën aan militarien beneden dien rang, en aan hunne weduwen en kinderen ed 2. 8vo. *Breda*, 1892, 4, 80 pp.

———Statistiek van het vervoer op de spoorwegen en tramwegen in Nederlandsch-Indië over het jaar 1890. 8vo. *'sGravenhage*, 1892, 44 pp. 4 tab.

———Staatsblad van Nederlandsch-Indië over het jaar 1891. 8vo. *Zalt-Bommel*, 1892, xiv, 137 pp.

———Superstition in Agam (Sumatra). *Tijdschr. Binninl. Bestuur*, 1892, (7).

———Contract met den radja van Bwool en akten van bevestiging betreffende den radja van Rioeng en de radja's van Badong. *Ind. Gids*, 1892, pp. 1282-1296.

———Het rapport van den Directeur van binnenlandsch bestuur betreffende de denkbeelden der koffie cultuur-commissie. *Ind. Gids*, 1892, pp. 1297-1314.

———Uitvoer van Ned. Indië naar Boston. *Ind. Gids*, 1892, p. 1370.

———Delhi-en Java—tabak op de Duitsche markt. *Ind. Gids*, 1892, p. 1370.

———De spaarbanh voor inlanders te Modjowarno in 1891. *Ind. Gids*, 1892, pp. 1371-1372.

———Een verbetering van de rede van den heer Tijdens over het Billiton contract. *Ind. Gids*, 1892, p. 1465.

———Het rapport van den directeur van Binnenlandsch Bestuur betreffende de denkbeelden der koffie cultuur commissie. *Ind. Gids*, 1892, pp. 1469-1486.

———Betere bewapening of betere oefening van de Indische infanterie? *Ind. Gids*, 1892, p. 1486.

———Een stuk geschiedenis aangaande het ontstaan van det Atjeh-oorlog. *Ind. Gids*, 1892, pp. 1487-1490.

———Het onderzoek in de Minahassa. *Ind. Gids*, 1892, pp. 1491-1502.

——Handel van Ned. Indië met Liverpool en Bremen. *Ind. Gids*, 1892, pp. 1555, 1556.

——Handel tusschen Atjeh en Penang. *Ind. Gids*, 1892, pp. 1557-1559.

——Uitvoer van Russische petroleum naar Java. *Ind. Gids*, 1892, p. 1559.

——Steenkolenhandel te Singapore. *Ind. Gids*s, 1892, p. 1560.

——De vordering der zending op Java. *Ind. Gids*, 1892, pp. 1561, 1562.

——Jer gedachtenis van Kolonel Diepenheim en Generaal Van Teijn. *Ind. Gids*, 1892, pp. 1563-1567.

——Het rapport van den Directeur van Binnenlandsch Bestuur betreffende de denkbeelden der Koffie cultuur-commissie. *Ind. Gids*, 1892, pp. 1697-1716.

——Gegronde aanmerkingen op het Koloniaal verslag. *Ind. Gids*, 1892, pp. 1716-1719.

——Het financiëel beheer van het Department van Marine. *Ind. Gids*, 1892, pp. 1720-1733.

——Een voorstel tot sluiting van het Weduwen en Weez en-fonds voor de officieren der landmacht in Nen.-Indie. I*nd. Gids*, 1892, pp. 1733-1736.

——Hulp voor Groot-Sangir. *Ind. Gids*, 1892, pp. 1736-1742

——Hoe de bevolkingscijfers van de inlanders op Java en Madoera worden verzameld. *Ind. Gids*, 1892, pp. 1742-1745.

——Handel van Ned.-Indië met San Francisco, Penang en Singapore. *Ind. Gids*, 1892, pp. 1787-1789.

——Toeneming van de bevolking en vermindering van den handel te Singapore. *Ind. Gids*, 1892, pp. 1789, 1790.

——Kolie-immigratie in Penang. *Ind. Gids*, 1892, pp. 1791, 1792.

——De handels beweging van de residentie Benkoelen voorheen en thans. *Ind. Gids*, 1892, p. 1792.

——Een wetsontwerp tot wijziging van de comptabiliteitswet. *Ind. Gids*, 1892, pp. 1897, 1898.

———De grieven en wenschen van de bevolking en hoofden der Minahassa. *Ind. Gids*, 1892, pp. 1898-1902.

———Het verslag van den Regeerings commissaris Gallois betreffende de Minahassa. *Ind. Gids*, 1892, pp. 1902-1919.

———De ongeregeldheden op Tjampea. *Ind. Gids*, 1892, pp. 1920-1926.

———Het officiëele relaas der Lomboksche zaken. *Ind. Gids*, 1892, pp. 1926-1932.

———Repeteergeweren en mitrailleurs voor Indie. *Ind. Gids*, 1892, pp. 1932, 1933.

———Voorstel tot oprichting van een nieuw weduwen-en weezenfonds voor de officieren van de landmacht in Ned-Indië. *Ind. Gids*, 1892, pp. 1933-1936.

———Waar de Javaansche landbouwer in Solo aan toe is bij een Europeeschen landhuurder. *Ind. Gids*, 1892, pp. 1942-1945.

———De Soekaboemische Landbouw-vereeniging over het nieuwe plan betreffende de Gouvernements-Koffie cultuur. *Ind. Gids*, 1892, pp. 1945-1957.

———De koeli-immigratie en-émigratie in de Straits Settlements. *Ind. Gids*, 1892, pp. 1987-1990.

———De dichtheid van de bevolking en de uitgestrektheid van den bouw grond op Java en Madoera. *Ind. Gids*, 1892, pp. 1994, 1995.

———De verhouding van de Minahassa tot het Nederlandsch gezag. *Ind. Gids*, 1892, pp. 2027-2035.

———Het ontwerp van wet tot wijziging der Indische comptabiliteits wet. *Ind. Gids*, 1892, pp. 2089-2101.

———De uitkomsten der Indische diensten 1867 tot en met 1891. *Ind. Gids*, 1892, pp. 2101-2106.

———Een en ander uit de Indische begrooting voor 1893. *Ind. Gids*, 1892, pp. 2100-2130.

———Het verslag van den Regeerings commissaris Gallois befreffende de Minahassa. *Ind. Gids*, 1892, pp. 2142-2164.

———Hongerdistricten of Java. *Ind. Gids*, 1892, pp. 2164-2167.

———Een officiëele mededeeling aangaande den ex-regent van Lebakkang. *Ind. Gids*, 1892, pp. 2167-2169.

———Hoe de bevolking van Karang-Anjar den assistent-resident Drossaers op prijs stelt. *Ind. Gids*, 1892, pp. 2170-2172.

———Torpedobooten en torpedokruisers voor Indië. *Ind. Gids*, 1892, p. 2172.

———De Zoutaanmaak op Madoera. *Ind. Gids*, 1892, pp. 2235, 2236.

———De bevolking van de Minahassa en die van Oost-Java. *Ind. Gids*, 1892, pp. 2354-2356.

———Het lot van den inlander in Djokja. *Ind. Gids*, 1892, p. 2356.

———Een gewraakte aanmerking op het Koloniaal verslag van 1891. *Ind. Gids*, 1892, pp. 2357, 2358.

———Handel van Ned-Indië met Marseille en Bangkok. *Ind. Gids*, 1892, p. 2383.

———Officiëele mededeelingen omtrent de slavernij in Ned-Indië. *Ind. Gids*, 1892, pp. 2394, 2395.

———De spraak der Indo-Europeanen. *Ind. Gids*, 1892, pp. 2396-2400.

———Wat een zendelings vrouw vermag. *Ind. Gids*, 1892, pp. 2416, 2417.

———Een nota van den Heer Geertsema over de keuring van Indische landsdienaren in Nederland. *Ind. Gids*, 1892, p. 2323.

———Het verslag van den Regeerings commissaris Gallois betreffende de Minahassa. Met aanteekingen. *Ind. Gids*, 1892, pp. 2332-2354.

———Een wetsontwerp ten behoeve van een spoorweg van Probolinggo naar Panaroekan. *Ind. Gids*, 1893, pp. 57-60.

———De algemeene secretarie van Indie een de laatste redevoeringen van het lid der tweede kamer Mr. H. D. L. Norman. *Ind. Gids*, 1892, pp. 60-64.

———Fouragegelden en bezuiniging. *Ind. Gids*, 1893, pp. 64, 65.

———Een voorstel om meer geld uit te geven voor het besturen van Ceram en de Z. O. Eilanden. *Ind. Gids*, 1893, pp. 66, 67.

———Een motie tot afschaffing van de Gouvernements-koffiecultuur in de Minahassa. *Ind. Gids*, 1893, pp. 68-85.

———Rangschikking der koffie dristricten van Java naar de opbrengst per bouw. *Ind. Gids*, 1893, pp. 137-141.

———Oordeel der Handelmaatschappij over de qualiteit van particuliere en van Gouvernements koffie. *Ind. Gids*, 1893, pp.141-143.

———Het gehalte van het Indische leger. *Ind. Gids*, 1893, pp. 144-145.

———Een statistieke opgave betreffende de inlandsche bevolking en nijverheid van Bandjarnegara. *Ind. Gids*, 1893, pp. 145, 146.

———Suppletoire contracten met Indragiri en met Tanette. *Ind. Gids* 1893, pp. 224-231.

———De nieuwe mailcontracten. *Ind. Gids*, 1893, pp. 231-236.

———De prĕmbé en de opium pacht. *Ind. Gids*, 1893, pp. 236-239.

———Antwoorden op aanmerkingen betreffende het Koloniaal verslag van 1891. *Ind. Gids*, 1893, pp. 241-248.

———Onveiligheid in Djokja. *Ind. Gids*, 1893, pp. 248-250.

———Eenige opmerkingen van Dr. Snouck Hurgronje over schrift-en klankleer. *Ind. Gids*, 1893, pp. 288-294.

———Proeven met het golfstillend vermogen van olie in den Compagnie's-tijd. *Ind. Gids*, 1893, pp. 295-297.

———Herinneringen aan een artillerie-en marineschool te Semarang. *Ind. Gids*, 1893, pp. 297, 298.

———Een heidensche trouwplechtigheid op Savoie. *Ind. Gids*, 1893, pp. 299-301.

———Krijgsaventuren van een Oosten-rijker in Nederlandsch-Indië. *Ind. Gids*, 1893, pp. 302-330. [See Barfus.]

——— Overeenkomsten met Soeppa Alietta en Sawitto. *Ind. Gids*, 1893, pp. 391-401.

———Suppletoire contracten met Sidenreng en Rappang. *Ind. Gids*, 1893, pp. 401-403.

———Een wetsontwerp ten behoeve van de bevloeïng en afwatering der Solo-wallei. *Ind. Gids*, 1893, pp. 403-412.

———Een gedachtenwisseling in de Eerste Kamer over de maritieme verdediging van Indië. *Ind. Gids*, 1893, pp. 412-418.

———Oorlogsschepen van buitenlandsche en oorlogsschepen van Nederlandsche werven. *Ind. Gids*, 1893, pp. 418-424.

———De heerendienst-regelingen in de practijk. *Ind. Gids*, 1893, pp. 425, 426.

———De pupilenschool te Gombong. *Ind. Gids*, 1893, pp. 429, 430.

———De resultaten van het onderzoek naar de grondrenten der inlanders op Java. *Ind. Gids*, 1893, pp. 430, 431.

———Handel tusschen Malakka en Sumatra's oostkust. *Ind. Gids*, 1893, p. 531.

———Handel van Ned-Indië met Hamburg. *Ind. Gids*, 1893, pp. 532-536.

———Het nieuwe infanteriegeweer. *Ind. Gids*, 1893, pp. 536, 537.

———Resultaten van de bevloeiings werken aan de Kali Kening. *Ind. Gids*, 1893, pp. 537-539.

———Overeenkomsten met Maiwa, Doerie, Batoelappa, Kassa en Wadjo. *Ind. Gids*, 1893, pp. 588-596.

———Een wetsontwerp tot regeling van de mijnontginningen in Ned-Indië. *Ind. Gids*, 1893, pp. 596-620.

———Het steeds vermeerderend Kantoorwerk. *Ind. Gids*, 1893, pp. 620-622.

———De Soekaboemische landbouw-vereeniging over een Koeli-ordonnantie. *Ind. Gids*. 1893, pp. 623-625.

———Een zoogenoemd vrije tabaks-cultuur. *Ind. Gids*, 1893, pp. 625-627.

———Handel van Java met Calcutta. *Ind. Gids*, 1893, p. 701.

———Bacteriën als oorzaken der sereh. *Ind. Gids*, 1893, p. 702.

———De Javaansche anthropopithecus. *Ind. Gids*, 1893, pp. 703-706.

———Wetsontwerp voor een spoorweg van Malang naar Blitar. *Ind. Gids*, 1893, pp. 786-789.

———Nogmaals de heerendienstregelingen in de practijk. *Ind. Gids*, 1893, pp. 789-791.

———De particuliere nijverheid, de Gouvernements-koffie cultuur en de emigratie van Javanen in de Preanger. *Ind. Gids*, 1893, pp. 791-795.

———Een vergelijkende studie over huwelijken tusschen bloedverwanten. *Ind. Gids*, 1893, pp. 880-884.

———De oogst van fabrieks-kinabast op Java. *Ind. Gids*, 1893, pp. 891, 892.

———Het steenkolendepot of Poeloe-Weh. *Ind. Gids*, 1893, p. 892.

———De Soesoehoenan van Soerakarta vazal. *Ind. Gids*, 1893, pp. 1029-1035.

———Uitvoeren van katoenen goederen uit Groot-Brittannië naar Ned-Indië. *Ind. Gids*, 1893, p. 1064.

———Stoomwaart tusschen Swatow en Ned-Indië. *Ind. Gids*. 1893, pp. 1064, 1065.

———De boomflord van Java. *Ind. Gids*, 1893, pp. 1065, 1066,

———Overeenkomst van de Korintjische poesaka's met de Makassaarsche en Boegineesche ornamenten. *Ind. Gids*, 1893, pp. 1066-1068.

———De oeconomische toestand van de gewesten die door den geprojecteerden spoorweg Probolinggo-Pasirian worden doorsneden. *Ind. Gids*, 1893, pp. 1073-1093.

ARCHER, W. J.—[Explorations in the Valley of the Mekong.] *Rev. Franc. et Etranger*, Mar. 15, 1893.

BADEN-POWELL, B. F. S.—In savage isles and settled lands: Malaysia, Australasia and Polynesia, 1888-1891. 8vo. *London*, 1892.

BADINGS, A. H. L.—Hollandsch-Maleische en Maleisch-Hollandsche samenspraken. ed. 2, 8vo. *'sHage*, 1893, 39, 290 pp.

Bassler, A.—Uber den Batak.-Stamm der Rajas. *Tertschr. f. Ethnol.* vol. xxiv, 1892, pp. 242-245.

Balen, J. Hendrik van.—De Nederlanders in Oost en West, te water en te land. Ser. 2, vol. viii. Het beleg van Kappar. De oorlog met de Makassaren in 1679. 8vo. *Amsterdam*, 1892, 12 pls.

Baret.—[On the opium traffic.] *Arch. Med. navale et cowniale*, 1893.

Barfus, C. von.—Kriegs fahrten eines alten Soldaten in fernen Osten. 8vo. *Stuttgart*, 1893.

Becher, H. M.—On the gold-quartz deposits of Pahang (Malay Peninsula). *Quart. Journ. Geor. Soc.* vol. xlix, 1893, pp. 84-88.

Beddard, F. E.—On some species of the genus Perichaeta (S. S.). *Prov. Zool. Soc*, 1892, pp. 153-172, pls. ix. and x.

Beekman, A. A.—Kleine schoolatlas van Nederland en zijne overzeesche bezittingen. ed. 2, 8vo. *Zutphen*, 1892, 14 kaart.

Beltran y Kozpide, R.—Descubrimiento de la Oceania por los Espanoles. 4to. *Madrid*, 1892, 38 pp.

Berg, L. W. C. van den.—De afwijkingen van het Mohammedaansche familieen erfrecht op Java en Madoera. *Bijdr. Taal-land-volk*, N. I. (5), vol. vii, pp. 454-513.

Bergroth, E.—Aradidi dell'isola do Engano raccolti dal dott. Elio Modigliani. *Ann. Mus. Genos.* (2), vol. xii, 1892, pp. 806, 807.

Bergsma, W. B.—Hoe de bevolkingcijfers van de inlanders op Java en Madoera worden verzameld. *Tijdschr. Ned. Aard. Gen.* (2), vol. ix, 1892, pp. 513-524.

Bettink, H.—De protestantsche zending gee mislukking, maar de zeghepraal des geloofs. *Ned. Zendingots.* iv, 1892, pp. 120-128.

Beverroorde, K. T. E. van.—Een Bezoek aan de Batatsche Horgolakte. *Bijdr. Volhenk. N. I.* vol. vii, 1892, p.p 609-621.

Bibles.—See British Museum.

BIBLIOTECA històrica Filipina.—Historias, cronicas, anales, memorias, relaciones, cartas, papeles sueltos y demàs documentos históricos, todos ineditos y desconocidos, sobre la conquista militar, civilización cristiana, gobierno y administración de este archipiélago, escogidos en los archidos de sns conventos religiosos y establecimientos officiales del Estado y de los pueblos. Monumento nacional elevado á las glorias espanolas por la iniciativa. . . . . del. . Senor *D. Jose Gutierrez dela Vega*. . . . . Vol. i. Historia general sacroprofana, politica y natural delas islas del Poniento Mamadas Filipinas por el padre *Juan J. Delgado*, C. J. Vol. ii. Crónica de la provincia de San Gregorio Magno de religiosos descalzos Filipinas, China, Jápon, etc., escrita por el P. Fr. *Francisco de Santa Innes*, ... cronista de la miasma provincia en 1676. Vol. i. 4to. *Manila*, 1892, xvi, 1012 and viii, 712 pp.

BLADVULLING. Eene kunstige Javaansche strophe. *Tijd. Ind. Taal-land-volk*, vol. xxxvi (2), 1892, pp. 231, 232.

———Eenige fontieve eigennamen inde door Meinsma uitgegeven pro-gabewerking van den Babad tanah Jawi. *Tijds. Ind. taal-land-volk.* vol. xxxv, 1893, pp. 127, 128.

BLUMENTULL, F.—Yakanen und Sámal-laut der Insel Basilan (Philippinen). *Ausland*, 1892, pp. 813-821.

———Die Namensgebung bei den alten Tagalen. *Globus*, vol. lxii, 1892, p. 253.

———Die Tagalische Familie. [From the Spanish of P. A. PATERNO.] *Om*, vol. xviii, 1892, pp. 103-105.

———Malabaren auf den Philippinen. *Deutsch. Rundsch. Geogr.* vol. xv, 1892, p. 44.

BOETTGER, O.—Liste von Kriechtieren und Lurchen aus dem tropischen Asian und aus Papuasien. *Ber. offenb. Ver*, (xxix-xxxii), 1892, pp. 65-157.

———Katalog der Batiachier-Sammlung in museum der Senckenbergischen naturforschenden Gesellschaft in Frankfurt am Main. 8vo. *Frankfurt*, 1892, 73 pp.

BOHALTA, H.—Praktische Grammatik der Javanische sprache mit Lesestücken, eineni Javannisch-Deutschen und Deutsch-

Javanischen worterbuck. 8vo. *Wien* (1892), vii, 192 pp.

BOLIVAR.—See Raffray.

BOOL, H. J.—De financieele verhouding tusschen Nederland en Indie. *Ind. Gids*, 1892, pp. 1815-1825.

———Nogmaals de financieele verhouding tusschen Nederland en Indie. *Ind Gids*, 1893, pp. 213-223.

———De verpachte middelen in Nederlandsch-Indie. *Vragen des tijds*, vol. xviii, 1892, pp. 25-128.

BORNEO.—Berbachtungen auf den Stationen Sandakan, Kudat, Gaya, Papar, und Limbuak in Britisch Borneo. 1892, 66 pp.

BOSCH, P. ten.—De sluiting der Atjehsche Kust. 8vo. *s'Hage*, 1892, 41 pp.

[BOSSCHER, C.]—Ter gedachtenis van den Heer C. Bosscher. *Ind. Gids*, 1893, pp. 181-187.

BOTT, W.—The Thermal Springs of Selangor and Malacca. *Journ. Str. Br. R. A. S.* no. 24, 1891 (Nov. '92), pp. 43-62.

———The alleged discovery of Mercury in Malacca. *Journ. Str. Br. E. A. S.* no. 24, 1891 (Nov. '92), pp. 79-82.

BOULEENGER, G. A.—Catalogue of thesnakes in the British Museum (Natural History). Vol. i containing the families Typhlopidæ, Glauconiidæ, Boidœ, Uropeltidæ, Xenopeltidæ, and Colubæaglyphæ, part. 8vo. *London.* [1893], xiii, 448 pp., 28 pls.

———An account of the reptiles and Batrachians collected by Mr. C. Hose on Mt. Dulit, Borneo. *Prov. Zool. Soc.* 1892, pp. 505-508, pls. xxix-xxx.

BOURGEOIS, J.—Descriptions de trois especes nouvelles de Lycides de Borneo. *Notes Leyden Mus.* vol. xiv, 1892, pp. 39-42.

BRANDES, J.—Nog eenige Javaansche piagem's uit het Mahommedaansche tijdvak, afkomstig van Mataram, Banten, en Palembang. II. *Tijds. Ind. taal-land-volk*, vol. xxv, 1893, pp. 110-126.

———*Ibid.* III. *ibid.* pp. 209-214.

———Een verslag van Professor A. C. Vreedt omtrent eene vergameling Javaansche en madoeriesche handschriften. *Tijd. Ind. taal-land-volk.* vol. xxxv, (3 and 4), 1892, pp. 443-480.

———Wilde dwergen op Sumatra. *Ind. Gids*, 1893, p. 298.

Brau de Saint Pol Lias, X.—The Battas. *Orientalist*, vol. iv, 1892, pp. 97-106. [Transl. from *Rev. Ethnogr.*]

British Museum.—Catalogue of printed books. Bible, pt. i. Complete Bibles in all languages. 4to. *London*, 1892, pp 1-244.

Brondgeest, see Agerbeck.

Brons Middel, R.—De tolk Nederlandsch-Maleische woorderlijst. 8vo. *'sHage*, 1892, 8, 80 pp.

———De hoofdpunten der Maleische grammatica toegelicht voor hen die de Maleische taal bestudeeren. 8vo. *Amsterdam*, 1893, 8, 57 pp.

———See Hikajat.

Brown, W. C.—A note on Rengas Poisoning. *Journ. Str. Br. R. A. S.* no. 24, 1891 (Nov. '92), pp. 83-86.

Burck, W.—[Plants protected by ants.] *Teyssmania*, no. 4, April, 1892.

———Contributions à la Flore de l'Archipel Malais. *Ann. jard. bot. Buitenzorg*, vol. xi (2), 1893, pp. 183-194.

Buren Schele, A. D. van.—Keur van gedenkwardigheden uit de geschiedenis der Nederlandsche Oost-en West-Indische bezittingen. ed. 2, 8vo. *Nijonegen-Amheim*, 1892, x, 280 pp.

Butler, A. G.—On a collection of Lepidoptera from Sandakan, N. E. Borneo. *Prov. Zool. Soc.* 1892, pp. 120-133, pl. vi.

Buys, M.—Twee maanden op Borneo's Westkust. 8vo. *Leiden*, 1892, 12, 230 pp.

Calon, L. F.—Eenige opmerkingen over het dialect van Sikka gevolgd door eenige bemerkingen op de vorige lijstjes, eenige spreekwijzen enz verzameld. *Tijdschr. taal-land-volk*, N. I., vol. xxxv, 1892, pp. 129-200.

Candeze, E.—Elatérides recueillis par M. Modigliani dans l'île

Engana en Mai et Juni 1891. *Ann. Mus. Genor.* (2), vol. x, 1892, pp. 795-800.

CHABAR MAMA SI HETONG.—Eene Minnagkabausche vertelling. 8vo. *Leiden*, 1892, 43 pp.

CHANTRE, E.—Objets antiques en pierre et en bronze du Camboge. *Bull. Soc. Anthrop. Lyon*, vol. x. 1892, pp. 44-46.

CHAPER, M.—See Drouet.

CHEVILLARD.—Le Génie des Kmers. Etude sur quelques monuments du Cambodge. Angkor-Vat, Bak-Heng, Angkor-Tom et Baion: Recherches sur leur origine et les causes de leur destruction. 8vo. *Nantes*, 1892, 47 pp.

CHIJS, J. A. van der.—Catalogues der Ethnologische verzameling van het Bataviaasch genootschap van kunsten en wetenschappen. ed. 4. 8vo. *Bataria*, 1892, viii, 219 pp.

CHIJS, J. A. van der.—Nederlandsch-Indisch Plakaatboek, 1602-1811. Tiende dul, 1776-1787. 8vo. *'sHage* (Batav. Genoots. Kunst. Weten.), 1892.

CLAINE, J.—Un an en Malaisie, 1889-90. *Tour la monde*, 1892, pp. 369-400.

———Compte rendu de la conférence sur la Malaisie. *Bull. Soc. Geogr. Anvers*, vol. xvi, 1892, pp. 305-309.

CLAINE, JULES.—Sumatra et la presqu 'île de Malacca. *Bull. Soc. Geogr. Lyon*, vol. x, 1892, pp. 527-531.

CLERCQ, F. S. A. DE.—[Native names for Plants]. *Teyssmannia*, nos. 6 and 7, 1892.

CLIFFORD, H.—A new collection of Malay Proverbs. *Journ. Str. Br. R.A.S.*, no. 24, 1891 (Nov. '92), pp. 87-120.

———Some notes on the Sakai Dialects of the Malay Peninsula. *Journ. Str. Br. R.A.S.*, no. 24, 1891 (Nov. '92), pp 13-30.

COBLIJN, W. A.—Voorstellen in het belang van het Indische leger. 8vo. *'sHage*, 1892, 96 pp.

COOKE, A. H.—On the geographical distribution of the land-mollusca of the Phillipine islands, and their relations to the Mollusca of the neighbouring groups. *Prov. Zool. Soc.* 1892, pp. 447-469.

CORDES, J. W. H.—De leiding der Gouvernements-koffiecultuur. *Ind. Gids*, 1892, pp. 1826-1858.

CRETIER, H.—Bijdragen uit het scheikundiglaboratorium van hoofdbureau van het Mijnwegen in Nederlandsch-Indië te Batavia. 1889-1891. *Jaarb. Mijn. Ned. O. I.*, vol. xxi., 1892, (Weten Gids), pp. 1-56.

CUSHING, J. N.—The Holy Bible in Shan. 8vo. *Rangoon*, 1892, 1613 pp.

DAVISON, W. R.—Descriptions of some new species of Birds from the Eastern coast of the Malay Peninsula. *Ibis*, 1892, pp. 99-103.

DEELSTRA, F.—Kleine aardrijkskunde van Nederland en Ned. Indië voor de volke school met schetskaartjes. ed 2, 4to. *Groningen*, 1892, 26 pp.

DEKKER.—See *Multatuli.*

DERMONT, J.—In de coffie. Oorspronketijke Indische Roman. 1893.

DES MICHELS, Abel.—Le poème de Bach Tu' (la souris blanche), moralité annamite. *Journ. Asiat.* [8], xx, 1892, pp. 139-156.

DIGNET, EDONARD.—Eléments de Grammaire Annamite. 8vo. *Paris*, 1892, ii, 137 pp.

DIJK, P. A. L. E. van.—De uit watering van het Tobameer en de Batoe Bong-bong. *Tijd. Ind. taal-land-volk.* vol. xxxv, (5 and 6), 1893, pp. 640-656.

———Nota over de Landstreek in de Tobalanden bekend onder den naam van Habinsaran. *Tijdschr. Ned. Aard. Gen.* (2), vol. ix, 1892, pp. 477-506.

DIRECTORY for Bangkok and Siam, 1892. 4to. London (Algar), *Singapore* (Sayle), 1892. pp. iii, 334, 32.

DIRKZWAGER, N.—Eenige opmerkingen over den tweeden titel van het Ontwerp-Strafwetboek voor Europeanen in Ned. Indië. 8vo. *Leiden*, 1892, viii, 96 pp.

DISSEL, J. van.—Dr. Snouck Hurgronje op glad ijs. *Ind. Gids*, 1893, pp. 526-530.

DISTANT, W. L.—A monograph of Oriental Cicadidae. 8vo. *London*. pts. v-vii (1892), pp. ix, 97-158, pls x-xv [completed.]

DOES, A. M. K. de.—Toestand der nijverheid en de afdeeling Bandjarnegara. *Tijdsch. taal-land-volk*. N. I. vol. xxxvi, 1892, pp. 1-112.

DOHRN, C. A.—*Belonuchus nulli-cedo. Stettin Ent. Zeit.* vol. liii, 1892, p. 74.

DORVILLE, MAX.—Nui Vong Phu la statue, qui devore. Légende Annamite. *Tradition*, vol. vi, pp. 278-281.

DOZY, J. P.—Geneeskundige gids voor Nederlandsch-Indië. ed. 3, 8vo. *Amsterdam*, 1892, 8, 210 pp.

DRONET, H. and M. CHAPER.—Voyage de M. Chaper à Bornéo. *Unionidae. Mem. Zool. Soc. France*, vol., v, 1892, pp. 145-155, 2 pls.

DULAURIER, ED.—Historie de la princesse Djeuhar Manikam. Conte Malaise. *Muséon*, vol. xi, 1892, pp. 435-447.

DUNLAP, E. P.—Buddhist priests of Siam. *Church at Home and Abroad*, May, 1892, pp. 423-426.

DUPONT, M.—De l'organisation politique et sociale du peuple Annamite. *Bull. Soc. Geogr. Comm. Havre*, 1892, pp. 94-114.

ECKHOUT, R. A.—Indischen ijzerenwegen. *Ind. Gids*, 1892, pp. 1415-1435.

ECKHOUT.—see Hooze.

ENGELBERT VAN BEVERVOORDE, K. T.—Een bezoek aan de Bataksche hoogvlakte. *Bijdr. taal-land-volk. N. I.* (5), vol. vii, 1892, pp. 609-621.

ENTHOVEN, J. J.K.—Eenige beschouwingen betreffende den aanleg van spoorwegen op Borneo. *Ind. Gids*, 1892, pp. 1611-1621.

ESCHAUZIER, O. C.—Bijdragen tot toelichting van het vraagstuk der décentralisatie van het bestuur op Java. 8vo. *'sHage*, 1892, 52 pp.

ESCHE, J. M.—Nog eens de Gouvernments-koffiecultuur. Een afgezaard thema ietwat gevariëerd. *Ind. Gids*, 1892, pp. 1220-1263.

FAIRLIE, JOHN.—Life in the Malay Peninsula. *Century Mag.* Feb. 1893.

FAIRMAIRE, L.—Nouveau genre de coleoptère Hétéromère [from Sumatra]. *Bull. Soc. Ent. Nance*, vol. lxi, 1892, p. vii.

FIGEE, S.—Uitkomsten van Meteorologische waarnemingen in Nederlandsch-Indië gedurende de Maandar Januari-Juni van het jaar 1891. *Nat. Tijds, N. I.* vol. lii, 1893, pp. 125-180.

FIGEE, S. and H. ONNEN.—Vulkanische verschijnselen en aard bevingen in den O. I. Archipel waargenomen gedurende het jaar 1891. *Nat. Tijd. N. I.* vol. lii, 1893, pp. 93-123.

FOKKER, A. A.—Episoden uit den tijd der Portugeesche heerschappij in Oost-Indie. *Ind. Gids*, 1892, pp. 1917, 2237, 2401.

———Maleische tolk voor ambtenaar en particulier. 8vo. *Zutphen*, 1893, 2, 280 pp.

———Een en ander naar aanleiding van "Eenige opmerkingen van Dr. Snouck Hurgronje over Schrift-en Klankleer." *Ind. Gids*, 1893, pp. 520-525.

FRANCIS, G.—Atoeran soerat-soerat, berisi bebrapa tjonto soerat-soerat kiriman dan perdjandjian dan permoehoenan dan laen-laen sebageinja, jang bergoena pada sekalian orang jang bitjara behasa Melajoe de Hindia-Olanda. 8vo. *Betawi*, 1892.

GAHAN C. J.—Description of some new Longicorn Coleoptera from the Indian region. *Annals Mag. Nat. Hist.* (6), vol. xi, 1893, pp. 377-389. [2 n. sp. from Borneo].

GERLACH, A. J. A.—Onze Oost. Geschiedkundige schetsen. 8vo. *'sHage*, 1892, 248 pp.

GESTRO, R.—Sopra due Hispidre di Engano raccolte al Dott. Elio Modiglani. *Ann. Mus. Genov.* (2), vol. x, 1892, pp. 791-794.

GIOI, M.—[The encroachments of Siam.] *Rev. Franc. et Etranger*, Mar. 1, 1893

GODWIN-AUSTEN, H. H.—On new species and varieties of the genus *Diplommatina* from the Garo, Nager, and Munipur hill-ranges, Assam. *Prov. Zool. Soc.* 1892, pp. 509-520.

GONGGRIJP, J. R. P. F.—Hikajat Kalila dan Damina, tersalin dari pada nosehat Malajoe, degan titah Goupernemen Hindija Nedèrlanda. 8vo. *Leiden*, 1892, 60, 393 pp.

GRAAFLAND, N.—Welke taal zal men in de Minahassa bezigen voor school en kerk. *Ned. Zendings.* vol. iv, 1892, pp. 85-98.

GRABOWSKY, F.—Die Theogonie der Dajaken auf Borneo. *Intern. Arch. Ethn.* vol. v, 1892, pp. 116-133.

GRANGER, A.—Description d'une nouvelle espèce I'Ampullaire [*A. brohardi*]. *Le Naturaliste,* 1892, p. 97, fig. [Cambodia.]

GRANPRE MOLIERE, F. B.—Het protestantisme in Ned. Indië. Eene voorlezing gehouden in de 27e vergardering van der Alkaarsche Predikanten-vereeniging op Donderdag den 6en Oct.1892, 8vo. *Helder*, 1892.

GRASHUIS, G. J.—De Javaansche Letterkunde. *Ind. Gids*, 1893, pp. 251, 488, 679, 856.

———De Regeerings-reglementen van Nederlandsch-Indie benevens het charter van Nederburgh. 8vo. *Leiden*, 1893, 16, 335 pp.

GRONEMAN, J.—De Hindoetempels te Parambanan in Midden-Java. *Eign Haard*, 1892, pp. 388-393.

———Tjandi Parambanan op Midden-Java, na de ontgraving. 4to. *'sHage*, 1893, 4, 30 pp, 64 pls, 2 plans.

GRONVELLE, A.—Deux espèces nouvelles de Coléoptères de la famille des Nitidulidre [Borneo]. *Notes Leyden Mus.* vol. xiv, 1892, pp. 43, 44.

GROUVELLE, A.—Voyage de M. E. Simon á l'île de Luzon, Philippines [Coleoptere]. *Ann. Soc. Ent. France,* vol. lxi, 1892, pp. 285-288.

Grunwedel.—Die Reisen des Herrn Vaughan Stevens in Malacca. *Zeitschr. Ethnol*, vol. xxiii, 1892, pp. 829-837.

Guillot, E.—La France au Laos. *Ann. Geogr.* vol. ii, 1892, pp. 97-100.

Haak, J.—Planten-kunde van Indië. 8vo. *Amsterdam*, 1892, 490 pp. Atlas.

Haberlandst, M.—Löffel von den Philippinen. *Mitth. Anthrop. Ges. Wein* (*Sitz.*), vol. xxi, 1892.

Hagen, K.—Uber die Musik einiger Naturvölker (Australier, Melanesier, Polynesier). 8vo. *Hamburg*, 1892, 35 pp.

Harribomee, G.—[Bregi (Sumatra) Superstitions]. *Tijds. Bunnienl Bestuur*, no. 7, 1892.

Haughton, H. T.—Native names of streets in Singapore. *Journ. Str. Br. R. A. S.*, no. 23, 1891, pp. 49-65.

Have, J. J. ten.—Oost en West Land en volk onzer Koloniën. 8vo. *'sHage*, 1892, 8, 317 pp., maps.

Haver Droeze, F. J.—Is het wenschelijk en mogelijk om eene vereeniging tot stand to brengen tusschen de officierskorpsen van het Nederlandsche en het Nederlandsch-Indische leger? *Versl. Vereen. bevef. Krijgswet*, 1891-92, vii, pp. 385-457.

Helfrich, O. L.—Aanvullingen en verberteringen op de Maleisch-Nederlandsch-Enganeesche woordenlijst *Tijdschr. taalland-volk. N. I.*, vol. xxxv, 1892, pp. 228-234.

Heller, K. M.—Eine neue Calandriden-art der galtung *Paratasis*, chev., aus Java. *Notes Leyden Mus.* vol. xiv, 1892 pp. 269-272.

Heutsz, J. B. van.—De onderwerping van Atjeh. 8vo. *'sHage*, 1893, 117 pp.

Hikajat Hang Toewah.—Tersalin Soeratannja oleh *R. Grons. Middel.* 8vo. Leiden, 1894, 113 pp.

[Hillier, W. R.]—Notes on the manners, customs, religions. and superstitions of the people inhabiting the Shan States, *Indian Antiq.* vol. xxxi, 1892, pp. 116-121.

Hoevell, G. W. W. C. van.—Een bezweringsfeest (mapasaoe) te Mooeton. *Intern Arch. Ethnogr.* vol. v, 1892, pp. 69-79 pl. vi.

———Korte beschrijving van het rijke Mooeton (bocht van Tomini). *Tijdschr. Ned. Aard. Gen.* (2), vol. ix, 1892, pp. 349-361.

HOEZOO, W.—Uit het verslag (over de zending te Samarang). *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 191-196.

HOLLANDER, J. J. de.—Handleiding bij de beoefening der Maleische taal-en letterkunde. ed. 6. 8vo. *Breda*, 1893, 12, 386, 316 pp.

HOLLE, K. F.—[How to prevent exhaustion of the soil.] *Tijds. Bunienl. Bestuur*, vol. vi (1), 1892.

———Een schrijven van den heer Holle over padicultuur-proeven. *Ind. Gids*, 1893, pp. 239-241.

HOMBRA, see Idris.

HOOZE, J. A., R. A. EEKHONT, and R. A. VAN SANDICK.—The coal-fields of Malaysia. 8vo. London, 1892. (*Trans. feder. Inst. Min. Engin.*)

HOOZE, J. A.—Topografische, geotrgische, mineralogische en mijnbouwkundige beschrijving van een gedulte der afdeerling Martafoera in de residentie Zuider-en oosterafdeeling van Borneo. *Jaarb. Mijn. Ned. O. I.* Jaarg. xxii, 1893 (Techn. Ged.) pp. 1-430, map and sections.

HORST. D. W.—Onze taak in Indie ten opzichte der onbemiddelde Euraziers en inlandsche Christenen. *Ind. Gids*, 1893, pp. 1-33.

HORST, R.—Earth-worms from the Malay Archipelago. Weber's *Zool. Ergeb. Reise. N. I.* vol. ii (1), 1893, pp. 28-77, pls. ii-iv.

HOSE, C.—A journey up the Baram river to Mt. Dulit and the Highlands of Borneo. *Geogr. Journ.* 1893, pp. 193-209.

HOUTEN, S. VAN,—Een nota van den Heer van Houten betreffende de Gouvernements-koffiecultuur. *Ind. Gids*, 1892, pp. 2326-2331.

HOUTHUYSEN. B. V.—Smokkelen-knevelen. Een poging tot terechtwijzing. *Ind. Gids*, 1892, pp. 1197-1213, 2036-2044.

HOVE, J. ten.—Hoe de Bantiks tot het Christendom overgingen. *Med. Ned. Zendel* vol. xxxvi, 1892, pp. 128-178.

Hughes, W. and J. F. Williams.—The geography of Asia. 8vo. *London*, 1892, (Phillip's Geographical Manuals.)

Hurgronje, C. Snouck.—Studien over Atjehsche Klanh en Shriftleer. *Tijd. Ind. taal-land-volk.* vol. xxx (3 and 4), 1892, pp. 346-442.

Idris bek el Hombra.—Satoe tjerita jang benar dari Tanah Soetji dalam tahoen 1886. Tersalin dari bahasa Arab oleh Ahmed Kiamil bi Abdoellah Kadri. 8vo. *Batavia*, 1892, 116 pp.

Ismagoen Danoe Winoto, R. M.—Lakon tjèkèl endralaja in Kleine dicht-maten. 8vo. *Probolinggo*, 1891.

Jacobs, J. R.—Uit het Indische krijgsleven. 8vo. *Utrecht*, 1892, 4, 239 pp.

———Indische vrienden. 8vo. *Zutphen*, 1893, 4, 246 pp.

Jacoby, M.—Descriptions of some new species of Phytophagus Coleoptera [Sumatra]. *Entomologist.* vol. xxv (suppl.), 1892, pp. 86-88.

Jedina, L. van.—An Asiens Küsten und Fürstenhöfen. 8vo. *Wien*, 1891, 732 pp. map and illustrations. [Georgetown, Singapore, Batavia, etc.]

Jellesma, E. J.—Bijdragen tot de Kennis van het Tompakewasch. 8vo. *Batavia*, 1892, 8, 100 pp.

"V. K."—De resident Schiff en de Atjeh-oorlog. *Ind. Gids*, 1892, pp. 2173-2175.

———Twee lezingen in het Indisch Genootschap betreffende de Vorstenlanden. *Ind. Gids*, 1893, pp. 431-446, 627-648.

Kan, C. M.—De litteratur over Nederlandsch-Indië—sedet Juli, 1891. *Tijdschr. Neder. Aard. Genoot.* (2), vol. ix, 1892, pp. 669-681.

Karsch, F.—Ueber eine Collection durch Herrn Hans Fruhstofer auf Java gefangener Elschniden. *Ent. Nachr.* vol. xviii, 1892, pp. 249-255.

Karsten, G.—Untersuchungen über die gattung Gnetum. *Ann. Jard. bot. Buitenzorg*, vol. xi (2), 1893, pp. 195-218.

KEANE, A. H.—Eastern Geography. A geography of the Malay Peninsula, Indo-China, the Eastern Archipelago, the Philippines, and New Guinea. ed. 2, 8vo. *London*, 1892, 202 pp. map.

KEITH, A.—Notes on the Siamese provinces of Koowi, Bangtaphan, Pateeo, and Champoon. *Journ. Str. Br. R. A. S.* no. 24, 1892, pp. 63-78.

———An account of a journey across the Malay Peninsula from Koh Lak to Mergui. *Journ. St. Br. R. A. S.* no. 24, 1892, pp. 31-41.

KELSALL, H. J.—Description of a new specie of Jungle-fowl said to come from Borneo. *Journ. Str. Br. R. S.* no. 24, 1891 (Nov. '92), pp. 168. [No specific name given.]

"H. J. K." [ELSALL].—Nest and eggs of Henicurus ruficapillus, Temm. *Journ. Str. Br. R. A. S.* no. 24. 1891 (Nov. '92), p. 170.

———Notes on the nest and eggs of Nyctiornis amicta. *Journ. Str. Br. R. A. S.* no. 24, 1891 (Nov. '92), pp. 169, 170.

———A large Mias in Singapore. *Journ. St. Br. R. A. S.* no. 24, 1891 (Nov. '92), pp. 168-169. [*Simia satyrus.*]

KEMP, P. H. VAN DER.—De quarantaine en epidemicvoorschriften in Nederlandsch-Indië. Toegelicht uit de officieele bescheiden en getoest aan de wetgeving in Nederland. 4to. *Batavia*, 1892, xxxviii, 327 pp.

KERN, H.—Sawuneesche bijdragen. *Bijdr. taal-land-volk, N. I.* vol. vii, 1892, pp. 513-554.

———The tale of the tortoise and the monkey. *Actes viii Congr. Orient. (Sect. Malay.)*, 1892, pp. 15-20.

KERREMANS, C.—Nouvelle espèce de Bupreotide recueillie dans l'île d'Engano, par M. le. Dr. E. Modigliani. *Ann. Mus. Genov.* (2), vol. xii, 1892, p. 1000.

———Voyage de M. Simon aux îles Philippines. Mem. 3. *Ann. Soc. Ent. France*, vol. lxi, 1892, pp. 21-26.

KESTEREN, C. E. van.—Op weeken grond de Minahassa tot Gouvernementsgebied is verklaard. *Ind. Gids*, 1893, pp. 34-56.

———Over enkele nieuwe begrootingsposten. *Ind. Gids*, 1892, pp. 2045-2071.

KIELSTRA, E. B.—Sumatra's Westkust sedert 1850. *Bijd. taal-land-volk. N. I.* (5), vol. vii, 1892, pp. 622-706.

———De ondergang van het Bandjermasinsche rijk. *Ind. Gids*, 1892, pp. 1264-1281.

———Bijdragen tot de geschiedenis van Borneo's Westerafdeeling. xxiv. *Ind. Gids*, 1893, pp. 952, 1441, 1679, 2072, 2301.

KLINKERT, H. C.—Nieuw Maleisch-Nederlandsch woordenboek met Arabisch karakter. 8vo. *Leiden.* 1892.

———Nieuw Maleisch-Nederlandsch zakwoordenboek. 8vo. *Leiden*, 1892.

KNAUTHE, K.—Scheldwoorden uit N. Oost-Indië. *Am. Ur-Quell*, vol. iii, 1892, p. 6.

KOLLEWIJN, A. M.—Summarised account of the Dutch Indian possessions. *China Rev.* vol. xx, 1892, pp. 42-49.

KONING. G. A. de.—De burderlijke gouvernements betrekkingen in Nederlandsch-Oost-Indië. Voorschriften op de benoembaarheid, uitzending, jaarwedden en kostuums der Oost-Indische ambtenaren, benevens reglementen, examenprogrammas, formatiën en andere bepalingen met die betrekkingen in verband. 8vo. *Amsterdam*, 1892, xxii, 579 pp.

KONOW, H.—J Asiens Farvande ombord i en fransk Orlogsmand ved Middelhavets, Indiens, Bagindiens, Kinas, Japans og Koreas Kyster. Pts. 1 and 2. 8vo. *Kjobenhavn*, 1892.

KOORDERS, S. H.—[Culture of the Sono-Kling *(Pterocarpus)* tree]. *Teyssmania*, no. 4, April, 1892.

———Bijdragen tot de kennis der boomflora of Java. II. Slentel tot de gesclachten en familien der woudboomen van Java. *Nat. Tijd. N. I.* vol. lii, 1893, pp. 259-328.

KRAATZ, G.—Weber *Tæniodera*-arten von Java und Malacca. *Deutsch. Ent. Zeit.* 1892, pp. 315-320.

KRAFT VAN ERMEL, W. K. L.—[Coffee culture in the Residency of Palembang.] *Tijds. Binnenl. Bestuur*, vol. vi (1), 1892.

KREEMER, J.—Hoe de Javaan zijne zieken verzorgt. *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 109-128.

"M. L."—The Putri [Gandaria] of Mount Ophir. *Journ. Str. Br. R. A. S.* no. 24, 1892, p. 165.

M. L.—Pantang Larang of Negri Sembilan. *Journ. Str. Br. R. A. S.* no. 23, 1891, pp. 142-144.

LAATS, J. H. J.—De scholen voor zonen van inlandsche hoofden en andere aanzienlijke inlanders en de nieuwe regeling van het algemeen toezicht op de lagere inlandsche scholen. *Ind. Gids*, 1892, pp. 1622-1639.

LAFOE, B.—Tra i Nias ed altri Asiatici. *Geogr. per tutti*, 1892, p. 13.

LAGEMANN, H.—Das niassische Mädchen von seiner geburt biszu zeiner Vesheiratung. *Tijds. Ind. taal-land-volk*, vol. xxxvi (3), 1893, pp. 296-324.

LAMINGTON.—Voyage au Siam. *Rev. Geogr. Intern.* no. 202. 1892.

LANE, R. A.—The Philippine Islands. *Cosmopolitan*, Aug, 1892.

LECLERC, A.—Moeurs et coutumes des Cambodgiens. *Rev. Sci. (Rose)*, vol. li, 1892, pp. 65-73, 108-112.

LEERSUM, P. van.—Kinologische Studien. V. Het alcaloid-gehalte van de Cinchona officinalis. *Nat. Tijds. N. I.* vol. lii, 1893, p. 33-38.

———Kinologische-Studien. VI. Alcoloid-gehalte van minder bekende Cinchona-soorten. *Nat. Tijds. N. I.* vol. lii, 1893, pp. 76-80.

LEMIRE, C.—Les anciens monuments des Kiams en Annam et au Tonkin. *L'Anthrop*, vol. iii, 1892, pp. 133-136.

LEWIS, G.—On new species of Histeridæ and Notes on others. *Annals Mag. Nat. Hist.* (6), vol. xi, 1893, p. 417-430.

———On some species of Histeridæ and one new genus (Borneo). *Ent. Month. Mag.* vol. xxviii, 1892, pp. 102-104.

LITH, P. A. van der.—Quelques communications au sujet du Livre des Merveilles de l'Inde. *Actes viii Congr. Orient.* (Sect. Malay), 1892, pp. 1-13.

———Nederlandsch Oost. Indië. ed. 2, 8vo. *Leiden*, 1892, pts. 1 and 2.

———Nederlandsch Oost. Indië. pt 3. ed. 2. 8vo. *Leiden*, 1893, pp. 129-192, 2 pls.

LOMAN, J. C. C.—Opilioniden von Sumratra, Java und Flores. *Weber' s Zool. Egerb. Reise. N. I.* vol. iii (1), 1893, pp. 1-27, pl.

LOW BROOKE.—The Natives of Borneo [Edited by *H. Ling Roth.*] II. *Journ. Anthrop. Inst.* fol. xxii, 1892, pp. 22-64.

M'GILVARY, D.—The Moosurs (Cambodia). *Church at Home and Abroad*, Nov. 1892, p. 394.

MATTHES, B. F.—Het boek Exodus in het Boegineesch vertaald. 8vo. *Amsterdam*, 1892.

———Het boek Exodus in het Makassaarsch vertaald. 8vo. *Amsterdam*, 1892.

———Die Psalmen und die Spruche Salomo's in Macassarische Sprache übersetzt. 2 vols. 8vo. *Haag*, 1892.

MARRE, A.—Un chapitre de la Grammaire Malaise. *Actis viii Congr. Orient* (Sect. Malay), 1892, pp. 21-28.

———Malais et Chinois. Coup d'oeil dur leurs relations mutuelles antérieurement à l'airrivee des Portugais dans les Indes orientales. 8vo. *Paris*, 1892, 12 pp. [An extract.]

———Un mot sur la langue Javanaise. *Actes viii Congr. Orient.* (Sect. Malay), 1892, pp. 29-35.

MEERBURG, J. W.—Lijst van eeinge woorden der Manggaraische taal. *Tijds. Ind. taal-land-volk*, vol. xxxv, 1893, pp. 75-109.

MEERWALVT, J. H.—Wijzen de tegenwoordige zeden en gewoonte der Batahs nog sporen aan van een oorspronkelijk Matriarchaat. *Tijdr. taal-land-volk. N. I.* vol. xli, 1892, p. 197.

MEJOW, V.—Bibliographia Asiatica. Bibliographie des livres et articles des journaux russes, concernant l'Asie la Sibérie exceptée, T. I. L'orient en general. La Chine, la Mandchourie, la Mongolie, la Djoungarie, la Corée, le Thibet, le Japon, l'Inde, la Perse, le Bêloutchistan, la Turquie, l'Arabie, l'Afghanistan, l'Asie centrale. *8vo. St. Petersburg*, 1891, iv, 230 pp.

MEMORANDA of books registered in the "Catalogue of books printed in the Straits Settlements." 1887-1893. fo. *Singapore*, 1887-1893.

MENOPO, J. M.—Menambahi deri kasel dan perdjandjian diboeat pengakoewan dan de bertigoehken segala hal-hal diantara *Tijd. Ind. taall-and-volk.* vol. xxxv (5 and 6), 1893, pp. 481-497.

MEREWETHER, E. M.—Outline of the history of the Dindings from the 17th century to the present time. *Journ, Str. Br. R. A. S.* no. 23, 1891, pp 35-47.

METZGER, E.—Europäische anseidler in Niderländisch-Ostindien. 8vo. *Hamburg* (Gem. Wiss. Vorth. heft 143), 1892.

MEURS, J. van.—Pesemah Oeloe Manna op het eiland Sumatra. *Stud. Godsd. Wetensch*, 1891, Johig. 23, vol. xxvi, 1892.

MEYNERS D'ESTREY, H.—Le bétel ou siri chez les peuples de l'Insulinde. *L'Anthrop.* vol. iii, 1892, pp. 193-200.

———Le sultanat de Kontei (côte est de Bornéo). *Rev. de Geogr.* vol. xvi, 1892, pp. 327-331.

———Elude ethnologique sur le lézard chez les peuples Malais et polynésiens. *L'Anthrop.* vol. iii, 1892, pp. 711-719.

MICHELL, E. B.—A Siamese-English Dictionary for the use of students in both languages. 4to. *Bangkok*, 1892, xix, 323 pp.

MOCQUARD, F.—Voyage de M. Chaper à Bornéo. Nouvelle contribution à la faune de Bornéo. *Mem. Soc. Zool. Fr.* vol. v, 1892, pp. 190-206, pl. vii.

MOVRREES, J. H.—Enkele opmerkingen over het vestigen van ondernemingen. Indrukken over de Molluken en in't bijzonder over Ceram. *Tijdschr. Ned. Aardr. Genost.* (2) vol. ix, 1892, pp. 654-668.

MORLET, L.—Diagnoses Molluscorum novorum in Indo-Chinâ collectarum. *Journ. Conch.* 1892 pp. 82-86.

———Descriptions d'especes nouvelles, provenant de l'Indo-Chine. *Journ Conch*, 1892, pp. 315-329, 3 pls.

Morris, D. F. van Braam.—Geschiedenis van het bondgenootschap Masenrempoeloe of Masenre-Boeloe. *Tijdschr. taal-land-volk. N. I.* vol. xxxvi, 1892, pp. 149-231.

———Nota van toclichting op het contract gesloten met het landschap Maiwa (Masenrempoeloe) op den 8-en September 1890. *Tijd. Ind. taal-land-volk*, vol. xxxvi (2), pp. 152-163.

———Ibid. . . . Batoelappa (Masenrempoeloe) op den 23-en November, 1890. *Tijd. Ind. taal-land-volk.* vol. xxxvi (2), 1892, pp. 185-192.

———Ibid. . . . Doerie (Masenrempoeloe) op den 30-en September, 1890. *Tijdr. Ind. taal-lamd-volk.* vol. xxxvi (2), 1892,pp. 164-177.

———Ibid. . . . Kassa (Masenrempoelee), op den 23-en November, 1890. *Tijdr. Ind. taal-land-volk.* vol. xxxvi (2), 1892, pp. 178-184.

———Ibid. . . . . . Sawietto (Adjatapparang), op den 30-en October, 1890. *Tijds. Ind. taal-land-volk.* vol. xxxvi (2), 1892, pp. 213-230.

———Ibid. . . . . . Soeppa (Adjatapparang) op den 18 en Juli, 1890. *Tijd. Ind. taal-land-volk.* vol. xxxvi (2), 1892, pp. 202-212.

———Ibid. . . . . . Alietta (Adjatapparang) op den 20en Juli, 189. *Tijd. Ind. taal-land-volk.* vol. xxxvi (2), 1892, pp. 193-201.

Muller, J. J. A.—De triangulatie van Sumatra. *Tijdschr. Ned. Aard. Genoot.* (2), vol. ix, 1892, pp. 1-33.

Muller, P. J.—De Zendeling J. J. Bär, en de zending op de Zuid-Wester-Eilnaden. *Stemm. Waarh. Vrede*, 1892, pp. 375-391, 457-474.

Multatuli.—Brieven bijdragen tot de Kennis van Zijne leven. vol. iv, 1862-1863. 8vo. *Amsterdam*, 1892, 253 pp.

Neurdenburg, J. C.—Zendeling-geneesheeren of geneersheer-zendelingen. *Med. Ned. Zending*, vol. xxxi, 1892, pp. 222-224.

NIEMANN, G. K.—Bloemlezing uit Maleische geschriften, 4 ed of 1st part; 3rd ed. of 2nd part. 8vo. *'sHage*, 1892, lv, 238 and xxx, 140 pp.

NIJLAND, E.—Schetsen uit Insulinde. 8vo. *Utrecht*, 1892.

NJI-SRI.—Clara Wildenau Roman. 8vo. *Amsterdam*, 1892.

NÛR-ED-DIN Muhammed Gîlânî.—Hidâjet el-habîb [Malay traditions]. 4to. *O. Meimanîja*, 1309, 80 pp.

NÛR-ED-DIN.—Ben alî Gingî. ben Muhammad Hamid ar-Rânî bed halq-essamâwât, etc. 4to. *Q. Meimanija*, 1309, 49 pp. [40 traditions on the value of knowledge; put into Javanese by *Hasan ben Ishâq Fattânî.*]

"A. O."—Siams Aussenhandel. *Deutsch. Rundsch. Geogr.* vol. xv, 1892, pp. 129-131.

O'BRIEN, H. A.—An old Minute by Sir Stamford Raffles. *Journ. Str. Br. R. A. S.* no. 24, 1891 (Nov.'92), pp. 1-12.

ONNEN, H.—Iets over middelpuntolëedende kracht. *Nat. Tijd. N. I.* vol. lii, 1893, pp. 39, 40.

ONNEN.—See Figee.

OOSTEROFF, R. J.—Lady Raffles. *Ind. Gids*, 1892, pp. 1368, 1369.

OPHUIJSEN, C. A. van.—Batahsche spreehwoorden en spreekwijzen. *Tijds. Ind. taal-land-volk.* vol. xxxv (5 and 6), 1893, pp. 613-639.

ORLEANS, HENRI, PRINCE D'.—Une excursion en Indo-Chine. De Hanoi à Bangkok. 8vo. *Paris*, 1892, 98 pp.

OUDEMANS.—[A festival at Buitenzorg]. *De Gids*, Oct. 1892.

OUSTALET, M. E.—Catalogue des oiseaux rapportés de l' île Nias par M. J. Claine en 1891. *Bull. Soc. Philom.* vol. viii, 1892, pp. 107-202.

PAGENOTECHER, A.—Beitrage zur Lepidoptren Fauna des Malayischen Archipels. 8vo. *Wiesbaden* (In progress).

PARDO DE TAVERA, T. H.—Las costumbres' de los Tagalos en Fillipinas, segun el Padre Plasencia. *Rev. contemporanea* (Madrid,) 1892, [20 pp.]

———Plantas medicinales de Filipinas. 4to. *Madrid*, 1892, 341 pp.

[PARKER, E. H.]—The old Shan Empire. *Rangoon*, 1892, 8 pp.

PENNINK, H. C.—Verslag van de diffusieproef gehouden te Klaling van 5 tot en met 11 Augustus, 1891, en vergelijking der resultaten van rutdiffusie contra molenarbeid ter beoordeeling der rentabiliteit, van vervanging der laatste door de eerste. 8vo. *Amsterdam*, 1892, 45 pp.

PERELAER, M. T. H.—Noordwest en Zuidoost, een orkaan in aantocht en Kapitein Aart. Twee schetsen uit Nederlandsch-Indië 8vo. *Amsterdam* 1892, 8, 570 pp.

PLEYTE, C. M.—Indonesische Masken. *Globus*, vol. lxi, 1892, pp. 321-325, 343-347.

PLEYTE, C. M.—Systematische beschrijving van de door de heeren Planten en Wertheim verzamelde Ethnographica, tijdens hun verblijf op de Zuidwester- en de Zuidoostes-eilanden. *Tijdrschr. Ned. Aard. Genoot.* (2), vol. ix, 1892, pp. 1051-1082.

———Some remarks in reference "to Die gegenwärtige Verbreitung des Blaserohrs und Bogens in Malayischen Archipel." *Intern. Arch. Ethnogr.* vol. v, 1892, pp. 172-174.

———Plechtigheden en gebruiken uit den cyclus van het familieleven der volken van den Indischen Archipel. *Bijdr. taal-land-volk, N. I.* (5), vol. vii, 1892, pp. 573-608.

POCOCK, R. I.—Scorpions from the Malay Archipelago. *Weber's Zool. Ergeb. Reise*, N. I. vol. iii. (1), 1893, pp. 84-100, pls. vi.

———Supplementary Notes. . . . . with descriptions of some new species from Spain and Malaysia. *Journ. Linn. Soc.* vol. xxiv, 1892, pp. 319-326.

———Supplementary notes on the Arachnida and Myriopoda of the Mergui Archipelago. *Journ. Linn. Soc.* vol. xxiv, 1892, pp. 316-318.

POENSEN, C.—Eerste Javaansche leesoefeningen en lijst van afgeleide en samengestelde vormen, in de eerst Javaansche leesoefeningen voorkomende. 2 pts. 8vo. *Leiden*, 1893, 16 and 20 pp.

———Bloemlezing uit Javaansche Proza Geschriften. 8vo. *Leiden*, 1892, xxxv, 312 pp.

POULAIN, C.—Note sur l'Inde francaise. No. 1. 8vo. *Châlons-sur Saone*, 1892, 71 pp.

PRELL, A.—Patoet uit het leven van een Indisch Officier. 8vo. *Amsterdam* (Warendorf's Novel-Bibl.), 1892.

PRIJAMANAH.—Eigen bloed. Realistische Indische Roman. *Ind. Gids*, 1893, pp. 723, 892, 1094.

PRSVRNT."—Over de wenschelijkheid van voorbereidende maatregelen tot invoering van een burgerlijken stand voor de inlanders op Java en Madoera. *Ind. Gids*, 1892, pp. 1171-1196.

QUANT, P. C. de,—[The ascent of the Goenoeng Siamat.] *Tijds. Binnenl. Bestuur*, vol. vi (1), 1892.

QUARLES VAN AFFORD, G. C. and J. VALTSZ.—Bawean. *Tijdschr. Ned. Aard. Genoot.* (2), vol. ix, 1892, pp. 43-49, map.

"R."—Huwelijken in Indië. *Ind. Gids*, 1893, pp, 385-390.

RAFFRAY, A. and J. BOLIVAR.—Etude sur les Arthropodes cavernicoles de l'île de Luzon. *Ann. Soc. Ent. France*, vol. lxi, 1892, pp. 27-34, pl. i

REGIMBART, M.—Notes descriptions de deux Hydrocoptus (Dytiscidae) nouveaux [Borneo]. *Notes Leyden Mus.* vol. xiv, 1892, pp. 11, 12.

RIDLEY, H. N.—Expedition to the Tahan District, Pahang, Malay Peninsula. *Prov. R. Geogr. Soc.* 1892, pp. 533-540.

R[IDLEY], H. N.—Discovery of a stone implement in Singapore. *Journ. Str. Br. R.* A. *S. no.* 23, 1891, p. 141.

" H. N. R "[IDLEY].—On the occurrence of Petrosavia in Perak. *Journ. Str. Br. R. A. S.*, no. 24, 1891 (Nov. '92), pp. 170-172.

"H. N. R. "—Diamonds in the Malay Peninsula. *Journ. Str. Br. R. A. S.* no. 24, 1891 (Nov. '92), pp. 166-167.

RINNOOY, J. N.—De voormalige oud-residentie Kisser. *Ned. Zendings*, vol. iv, 1892, pp. 65-85.

RITSEMA, C.—Description of a new species of the Lucanoid genus *Cyclommatus*, and list of the described species (Java). *Notes Leyden Mus.* vol. xiv, 1892, pp. 1-6.

———A new Lucanoid Beettle from Java. *Notes Leyden Mus.* vol. xiv, 1892, p, 31

———A new Longicorn Beetle [Amboyna]. *Notes Leyden Mus.* vol. xiv, 1892, p. 38.

———*Cyclommatus squamosus*, a new Lucanid from Borneo. *Notes Leyden Mus.* vol. xiv, 1892, p. 54.

———*Prosopocoelus tarsalis*, a new Lucanid [Borneo]. *Notes Leyden Mus.* vol. xiv, 1892 p. 191.

ROELOFS, W.—Description d' une espèce nouvelle du genre *Engithopus* [Borneo]. *Notes Leyden Mus.* vol, xiv, 1892, p. 7.

ROGENHOFER, A. F.—Neue Lepidopteren des K. K. Nat. Hofmus. *Verbs. Vool. bot. Ges, Wein*, vol. xlii, 1892, pp. 571-575.

ROOIJ, J. F. A. de.—Heerendiensten. Eene vergelijkende studie. *Inds. Gids*, 1893, pp. 357-384, 560-587.

ROORDA, T.—Beknopte Javaansche grammatica, benevens een leesboek tot oefening in de Javaansche taal. ed. 4, 8vo. *Zwolle*, 1893, 12, 342 pp.

ROSA, D.—I Lombrichi raccolti nell' isola di Engano dall Dott. E. Modigliani. *Ann. Mus. Genov.* (2), vol. xii, 1892, pp. 542-548.

———Die exotische Terricolen des K. K. natur-historischen Hofmuseums. *Ann. Hofmus. Wein*, vol. vi, 1891, pp. 379-406, pls. xii and xiv. [See also *Ball. Mus. Zool. Torino*, vol. vii. (114), 1892.]

ROSSKOPF, J. M.—De weeshuizen te Semarang en de pupillenschool te Gomlong. Een nalezing op een gedachtenwisseling in het Indisch Genootschap. *Ind. Gids*, 1892, pp. 1214-1219.

SANDICK,—R. A. VAN.—Leed en lief uit Bantam. 8vo. *Zutphen*, 1892, 241 pp.

Sandick, R. A.—Het laatste hoofdstuk van de Ombiliën-quaestie.

Sandick, R.A. van—Het zwarte goud op Sumatra. *Geschied. Aardr. Tijdschr.* vol. vii, 1892, pp. 183-191.

———Een leekenoordeel over een arrest van het Hooggerechtshof. De Zaak Cores de Vries. *Ind. Gids*, 1892, pp. 2267-2275.

Sandick, see Hooze.

Schaank, S. H.—De Kongsi's van Montrado. Bijdrage tot de geschiedenis en de kennis van het wegen der Chineesche vereenigingen op de westkust van Borneo. *Tijd. Ind. taal-land-volk*, vol. xxxv (5 and 6), 1893, pp. 498-612.

Schepman, M. M.—Land and fresh water shells collected by Dr. H. ten Kate in Soemba, Timor, and other East-Indian Islands. *Notes Leyden Mus.* vol. xiv, 1892, pp. 145-160, 1 pl.

S[chlegel], G[ustav].—Luzon. *T'oung Pao*, vol. iii, 1892, p. 321.

Schmeltz. J. D. E.—Beitrage zur Ethnographie von Borneo. II. *Intern. Arch. Ethnogr*, vol. v, 1892, pp. 232-238.

Schewiakov, W.—Ueber die geographische Verbreitung der Sasswasser-Protogven. *Verb. Ver. Heidelbung* (n. f.), vol. iv (5), 1892, pp. 544-567.

Schippers, M. H.—Herinneringen uit mijn vorigen werkkring te Maoembi in de Minahassa. *Med. Ned. Zendel.* vol, xxxvi, 1892, pp. 201-218.

Schuurmans, N. D.—Overzicht van het Zendingsveld in Nederlandsch-Indië. De Doopsgezinde Zending. *Aed. Zendings*, vol. iv, 1892, pp. 103-120.

Semper, C.—Reisen im Archipel der Philippinen Bd. v. Beitrag zur Indo-Malayischen Lepidopteren-fauna. Abth. i. Die Tagfalter. Rhopalocera, pt. viii, 4to. *Berlin*, 1892, pp. 271-380, pls. xlvii-xlix.

Senna, A.—Contributions to the knowledge of the family Brenthidae. viii. Enumeration of the species known as yet from Java. *Notes Leyden Mus.* vol. xiv, 1892, pp. 161-186.

SHAND, W.—The Batak "Microbe" Manuscript. *Asiat. Q. Rev.* (2), vol. iv, 1892. pp. 201-203.

SHARP, D.—A new species of the Staphylinid genus *Trygens.* (Java). *Notes Leyden Mus.* vol. xiv, 1892, p. 61.

SHARPE, R. BOWDLER.—Description of new species of Birds discovered by Mr. C. Hose on Mount Dulit in N. W. Borneo. *Ibis*, 1892, pp. 322-324.

———On a collection of Birds from Mount Dulit in North-Western Borneo. *Ibis*, 1892, pp. 430-442, pls. x and xi.

SHERBORN, C. D.—A Bibliography of Malaya from July, 1890, to June, 1891, *Journ. Str. Br. R. A. S.*, no. 24, 1891 (Nov. 92), pp. 121-164.

SIAM. TRADE AND FINANCE.—Trade of the District of Her Majesty's Consulate-General at Bangkok for 1892. *Parl Paper* [6855-154], 1893.

———Trade of Chiengmai for 1891. *Parl. Paper*, (6812-14), 1892.

———Trade of Bangkok for 1891. *Parl. Paper*, (6812-12), 1892.

SIMON, E.—Arachnides des Iles Philippines. *Ann. Soc. Ent. France*, vol. lxi, 1892, pp. 35-52.

SIMROTH, H.—Uber eine reihe von *Vaginula*-arten. *Sitzungober. Ges Leipszig*, vol. xviii, 1892, pp. 58-73, 84-86.

———Uber einge Parmanon arten. *Weber's Zool. Ergeb. Reise*, N. I. vol. iii (1), 1893, pp. 100-110, pls. vii, viii.

SMITH, EDGAR A.—On a small collection of land shells from Palawan and Balabac, Philippine Islands. *Annals Mag. Nat. Hist.* (6), vol. xi, 1893, pp. 347-353, pl. xviii.

SMITH, R. GROSE.—Descriptions of three new species of Butterflies captured by Mr. D. Cator in British North Borneo, in the collection of Mr. Grose Smith. *Annals Mag. Nat. Hist.* (6), vol. x, 1892, pp. 426-429.

SNELLEP, P. C. T.—Aanteckeningen over Lepidoptera schadelijk voor het suikerriet. *Tijdschr. Ent.* vol. xxxiv, 1892, pp. 341-356, pls, xviii, xix.

——Beschrijving van eenige nieuwe Javaansche 'dagolinders. *Tijdschr. Ent.* vol. xxxv, 1892, pp. 133-144, pls. iii, iv.

SOETAN MARADJO LELO.—De denkbeelden van den Heer K. F. Holle over rationeele cultuur contra roofbouw ter Sumatra's Westkust. *Ind. Gids*, 1892, pp. 2317-2322.

STAHL, E.—Regenfall und Blattgestalt ein Beitrag zur Pfanzenbiologie. *Ann. jard. bot. Buitenzorg*, vol. xi. (2), 1893, pp. 98-182.

STAKMAN, M. C. E.—De Minahassa. 8vo. *Amsterdam*, 1893, 4, 185 pp.

STANDRINGER, O.—Zwei neue *Charaxes*-arten. *Deutsch. Ent. Zeit.* (Lep.) iv, 1892, pp. 260-263.

——Einige neue Rhopalocera aus Nord-Borneo. *Deutsch. Ent. Zeit.* (Lep.) iv, 1892, pp. 449-452.

——*Ornithoptera andromache*, n. sp. *Deutsch. Ent. Zeib.* (Lep.) iv, 1892, p. 393.

STELLWAGEN, A. W.—Sultan Amangkoe-Rat (Tagal wangi). Eene bladzijde uit de geschiedenis van Mataram. *Ind. Gids.* 1892, pp. 1859-1896, 2276-2300.

STEVENS, H. V.—Materialen zur Kenntniss der wilden Stamme auf die Halbinsel Malaka. 4to. *Berlin* (Veroff. K. Mus. Volken-kunde, vol. ii), 1892, vii and 81-164 pp.

STOK, J. P. v. D.—Regenwaarnemingen in Ned. Indië. 13 Jaarg, 1891, 8vo. *Batavia*, 1893, 12, 416 pp., map.

STRAITS SETTLEMENTS.—Further papers relating to the Protected Malay States. Reports for 1891. *Parl. Paper*, (6858), 1893.

——Colonial Reports. 59 Annual Reports for 1891. *Parl. Paper.* (6857), 1893.

SUNDERMANN, H.—Fünfzig niassische Sprichwôrter. *Globus*, vol. lxi, 1892, pp. 298-300.

——Kleine Niassische Chrestomathie mit Worterverzeichniss, gesammelt und übersetzt. *Bijdr. taal-land-volk. N. I.* vol. vii, 1892, pp, 335-454.

——Neue Beiträge zur Ethnographie von Nias. *Ausland*, 1892 pp. 577, 598-616.

———Kurzgefasste Niassische grammatik. 8vo. *Mörs*, 1892, iv, 110 pp.

———Deutsch-Niassisches Worterbuch unter Mitwirkung von Missionar H. Langemann (für O. südl. Dialekt) zusammengesteut. 8vo. *Mörs*, 1892, 264 pp.

THOMAS, OLDFIELD.—On the mammalia collected by Signor Leonardo Fea in Burma and Tanasserim. *Ann. Mus. Genov.* (2), vol. x, 1892, pp. 913-949, pls. x and xi.

———On some mammals from Mount Dulit, North Borneo. *Prov. Zool. Soc.*, 1892, pp. 221-227, pls. xviii and xix.

THOMAS, O.—Description of two new Bornean Squirrels. *Annals Mag. Nat. Hist.* (6), vol. x, 1892, pp. 214-216.

———Description of a remarkable new Semnopithecus from Sarawak. *Annals Mag. Nat. Hist.* (6), vol. x, 1892, pp. 475-477.

———On some new Mammalia from the East Indian Archipelago. *Annals. Mag. Nat. Hist.* (6), vol. ix, 1892, pp. 250-254.

———On some new Bornean Mammalia. *Annals Mag. Nat. Hist.* (6), vol. xi, 1893, pp. 341-347.

THOMAS, OLDFIELD.—Exhibition of, and remarks upon, three specimens of the Bornean monkey, recently described as *Semnopithecus cruciger. Prov. Zool. Soc.* 1893, p. 3.

THOMAS, J. W.—Von Nias nach Kaiser-Wilhelms-Land und über Australien zurück nach Deutschland. 8vo. *Gütersloh*, 1892, 141 pp.

THOMAS, THEODOOR.—Eenige opmerkingen naar aanleiding van het Pachtsteloel op Java. 1892 (Academisch Proefschrift).

THORELL, T.—Studie sui Regni Malesi e Papuani. Part. iv. *Ann. Mus. Genov.* vol. xxxi (191-2), pp. 1-490.

———Novœ species Aranearum a Cel. Th. Workman in ins. Singapore collectœ. *Bull. Ent. Ital.* vol. xxiv (3), 1892, pp. 211-282.

TSCHIRCH, A.—Indische Heil-und Nutzpflanzen und deren Kultur. 8vo. *Berlin*, 1892, 213 pp. 128 pls.

TUUK, H. N. VAN DER.—Bijdrage tot de Kennis van de taal der Karo-Bataks. *Med. Ned. Zendel.* vol. xxxvi, 1892, pp. 178-181.

VOLCK, J. W. VAN DER.—Beknopte Handleiding om de Javaansche taal te leeren spreken. 8vo. *Leiden*, 1892.

VANHILLE J. W.—Radja Bĕraïl. *Ind. Gids*, 1892, pp. 1553, 1554.

VEMERIUS (Meor).—De vrouw in de Keuken. Nieuw Nederlandsch Kookbock. Volledige verzameling van praktisch beproefde recepten voor dagelijksche-en feestmaaltijden gevolgd door de Indische rijsttafel. 8vo. *Schiedan*, 1892, 8, 319 pp.

VERBECK, R. D. M.—Vorlänfiger Bericht uber nummuliten, Orbitoiden und alveolinen van Java und uber das Alter des Gesteine, in welchen sic vorkommen. *Neues. Jahrbach f. Min.*, 1892, (1), pp. 65-67.

VERIJK, J. J.—Bijdrage tot de kennis van den Sapoedi-Archipel. *Tijdschr taal-land-volk. N. I.*, vol. xxxv, 1892, pp. 234-248, map.

VERWIJK, J. J.—Aante keningen omtrent het dieng-gebezte en zijn mertwaardigheden. *Tijds. Ind. taal-land-volk*, vol. xxxv, 1893, pp. 215-222.

VINCIGNERRE, D.--Rettili e Batraci di Engano raccolti dal dott. Elio Modigliani. *Ann. Mus. Genov.* (2), vol. xii, 1892, pp. 517-526.

VIRCHOW.—Die wilden Eingebornen von Malacca. *Teitschr. Ethnol.* vol. xxiii, 1892, pp. 837-847.

VISSER, W. M.—Onze zeemacht in Nederland en de Koloniën. Part 2. 8vo. *'sHage*, 1892, pp. 129-321.

———Onze zeemacht in Nederland en de Koloniën. Pt. 3. 8vo. *'sHage*, 1892, pp. 323-434.

VOOREN, D.—Eenige aanteekeningen over het Javaansch in de Residentie Pekalongan. *Ind. Gids*, 1892, pp. 1979-1985.

VORDERMAN, A. G.—Bijdrage tot de kennis der avi-fauna van het Eiland Bawean. *Nat. Tijds. Ned. Ind.* vol. li (4), 1892, pp. 417-422.

———Java Vögels. I. Net. Tijd. Ned. Ind. vol-li (4), 1892, pp. 373-416.

———Over eenige weinig bekende ond heden van de Residentie Madoera. *Tijds. Ind. taal-land-volk.* vol. xxxvi (3), 1893, pp. 233-246.

———Bijdrage tot de kennis der vogels van den Kangean Archipel. *Nat. Tijd. N. I.* vol. lii, 1893, pp. 181-208.

VORSTMAN, R.—De verbannen regent van Labakkung. 8vo. *Leiden*, 1892, 97 pp.

VREEDE, A. C.—Catalogus van de Javaansche en Madoereesche handschriften der Liedsche Universiteits-bibliotheek. 8vo. *Leiden*, 1892, 10, 434 pp.

———Notiz über eine Handschrift auf Plamblattstreifen von Bali (?) *Intern. Arch. Ethnogr.* vol. v, 1892, p. 137.

VRIES, jr., J. H. DE.—Schetsen uit Indie. In de Molukken. *Stemm Waarb. Vrede*, 1892, pp. 353-475.

VROLIK, W. K. M.—Billiton Onuitgesproken rede. 8vo. *'sGravenhage*, 1892, 44 pp.

———De verlenging der Billitonconcessie. Nabetrachting. Vervolg op de "Onuitgesproken rede." 8vo. *'sGravenhage*, 1892, 34 pp.

WAAL, G. de.—Aanvullingen op Van der Toorn's Minangkabusch-Maleisch-Nederlandsch Woordenboek. *Inds. Gids*, 1892, pp. 2210-2220.

WAANDERS, F. G. VAN BLOEMEN.—Ter gedachtenis van der heer. . . . *Ind. Gids*, 1892 pp. 2006, 20007.

WALL, A. F. VAN DE.—Kort begrip der beteekenis van de tarekat, naar het Maleisch van Sajid Oesman ibn Abdoellah ibn Akil ibn Jahja, adviseur honorair voor Arabische zaken. *Tijdschr. taal-land-volk. N. I.* vol. xxxv, 1892, pp. 223-228.

WEBER, M.—Notizen über Sängethiere des Indischen Archipels. *Weber's Zool. Ergeb. Reise*, N. I. vol. iii (1), 1893, pp. 260-268.

WENT, F.—[Tidal Forests (Mangroves) in the Tropics]. *Teysmania*, no. 4, April, 1892.

WERSHOVEN, F. J.—Lehr-und-Lesebuch der Siamesischen Sprache und Deutsch-Siamesisches wörterbuch. 8vo. *Wien* (1892), vii, 181 pp.

WESSELS, L.—Koffiemonopolie en verplichte levering. *Ind. Gids*, 1893, pp. 545-559.

———De nieuwe toekomst der Gouvernements-Koffiecultuur op Java. *Ind Gids*, 1893, pp. 188-212.

———De voorstellen van de Indische Regeering omtrent de Gouvernements-koffiecultuur op Java. *Ind. Gids*, 1892, pp. 1746-1749.

WESTENBERG, C. J.—Wetenschap op Humbug. Geschreven naar aanleiding eener door den Heer Jules Claine op het orientaeisten-Congres te London gehounden lezing over eene door hem gemaakte reis in de Karo-landen. *Tijdschr. Ned. Aard. Genost.* (2), vol. ix, 1892, pp. 49-70.

WESTERRODE, W. DE WOLFF VAN.—Ijzeren belastinggaarders. *Ind. Gids*, 1892, pp. 1640-1678.

WIEGMANN, FR.—Beitrage zur anatomie der Landschnecken des Indischen Archipels. *Weber's Zool. Ergeb. Reise. N. I.* vol. iii (1), 1893, pp. 112-261, pls. ix-xvi.

WIGMAN, H. J.—[Orchids]. *Teyssmania*, May, 1892.

WIJK, D. GERTH VAN.—De Koranische verhalen in het Maleisch. *Tijd. Ind. taal-land-volk.* vol. xxxv (3 and 4), 1892, pp. 249-345.

WILKEN, G. A.—Handleiding voor de vergelijkende volkenkunde van Ned. Indië. Parts 7 and 8. 8vo. *Leiden*, 1893, pp. 483-642.

WILLIAMS, see Hughes.

WILLINCK, G. D.—De grendrechten bij de volken van den Indischen Archipel. 8vo. *Haag*, 1891.

WITKAMP, H. PH. TH.—Kaart van Nederlandsch-Indië. 2 sheets, fo. *Amsterdam*, 1893.

———De grootle der eilanden en der gewesten en afdeelingen en Nederlandsch-Indië. *Tijdschr Ned. Aard. Gen.* (2), vol. ix, 1892, pp. 361-372.

WOLFF VAN WESTERODE, W. de.—Ijzeren belastinggaaarders. *Ind. Gids*, 1892, pp. 1395-1414.

WORSFOLD, W. BASIL.—Dutch Society in Java.—*Fortnightly Rev.* Mar. 1893.

WORSFOLD, W. B.—A visit to Java, with an account of the founding of Singapore. 8vo. *London*, 1893, pp. xii, 284.

WRAY,—Notes ethnographiques sur les naturels de l'île de Nias, sud-ouest de Sumatra. *Bull. Soc. Anthrop. Lyon*, vol. x, 1892, pp. 36-39.

WULP, F. M. v. d.—Einige uitlandische diptera (Java). *Tijdschr. Ent.* vol. xxxiv, 1892, p. 193, pl. xii.

YERSIM, A.—Map and description of the River Sebong, from its source to its confluence with the Mekong. *C. R. Soc. Geogr. Paris*, 1893, nos. 15 and 16.

ZELLE, L. J.—Les Kodja's. *Bull. Soc. Anthrop. Paris*, (4) vol. iii, 1892, pp. 68-71.

ZONDERVAN, H.—Sumatra. *Deutsch. geogr. Blatt.* vol. xv, 1892, pp. 256-263.

———K. Martin's Reisen im hinterindischen Archipel. *Ausland*. 1892, p. 638.

———Niederlandisch-Indische Kartographie. *Ausland*, 1892, p. 718.

MAPS.

Kaart van AMBOINA, de Oeliassers en de Banda-eilanden. fo. *Amsterdam*, 1892. [Banda-eilander 1:5,000,000; West Indische-eilanden 1:1,000,000]

BALI, Lombok, and Sumbawa.—Ports et mouillages aux îles. *Paris* (Serv. Hydrog.), 1892.

Kaart van de BANDA-eilanden. 1:5,000,000. *Amsterdam*, 1892.

BORNEO.—East Coast; Silam Harbour. 1 : 14,600. *London*, (Admiralty), 1891.

JAVA. Isles á l'est de la Rade de Palmede, Baie de Wanigapung et Nagamessi, etc. (No. 4675). *Paris*, 1892.

Kaart der landbouw-ondernemingen in Oost-JAVA. Soerabaja, Kediri, Pasoeroean, Probolinggo en Bezoeki. 1 : 250,000. 12 sheets, fo. *Amsterdam*, 1892.

New Sketch Map of the Protected MALAY State of Perak. Scale 4 miles 1 inch. 2 sheets (Trigonometrical Survey), 1892.

Kaart van den NEDERLANDSCH-INDISCHEN Archipel met toelichting. 1 : 6,000,000. By C. M. Kan. *Amsterdam*, 1892.

Index van kaarten van den NEDERLANDSCH-Indischen Archipel fo. *Batavia*, 1892.

Schoolatlas van Nederland en zijne bezittingen. By P. H. Witkamp. ed. 5, 4to. *Arnheim*, 1892, (16 double maps).

Kleine schoolatlas van Nederland en zijne Overzeesche bezittingen. By P. H. Witkamp. ed. 5, 4to. *Arnheim*, 1892 (18 maps).

Kleine schoolatlas van Nederland en zijne overzeesche bezittingen. By P. H. Witkamp. ed. 15, 4to. *Arnheim*, 1892, (15 maps).

VOLTELEN'S eerste schoolatlas van Nederland en zijne bezittingen. ed. 3, 4to. *Arnheim*, 1892 (14 maps).

Kleine schoolatlas van Nederland en zijne overzeesche bezittingen. By A. A. Beekman. ed. 2, 8vo. *Zutphen*, 1892 (14 maps).

Schoolatlas van Nederland en zijne overzeesche bezittingen. By R. Bos. 4to. *Groningen*, 1892 (16 maps).

PHILIPPINES.—Katbalogan Buri, and Darajuai anchorages 1: 22,100; Mauban Bay 1: 21,500; Port Libas 1: 18,250. *London* (Admiralty), 1891.

Kaart van SUMATRA, Bangkaen de Riouw Lingga Archipel. 1 : 1,000,000. By I. Dornseiffen and E. de Geest. 12 sheets fo. *Amsterdam*, 1892.

SUMATRA.—Cote ouest: Baie de Krung-Raba, Passage Raja Baie de Ketapan Pasir, etc. (No. 4669)—Baie Sidoh, Rade de Trumon, Passage entre Grand Simalu et Petit Simalu, etc. (No. 4670)—Rode de Tapus, Tabujong; Baie de Tabujong, etc. (No. 4671)—Iles Sipora, Pagé, Engano. (No. 4672 —Baie de Simalapeh. Tabekat; Rade Prianam, Tiku; Baie de Kadorei, Bunga; Detroit de Zeebloem; Rade de Padang. (No. 4682)—Cote nord. Mouilloges. Baie Krung-Raja; Rade de Lok-Semawee, d'Edi-Rajut; Entrées des rivièeres Benjalang, Djambu-Ajer, etc. (No. 4673). *Paris*, 1891.

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